amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

VOL. 47, No. 5 MAY 1979

FEATURED IN THIS ISSUE:

- ★ VOX ADVANCE
- ★ SIMPLE 10 GHz RECEIVER WITH TRANSMITTER OPTION
- ★ RETURNING THE 50-52 MHz ALLOCATION
- ★ EARLY DAYS IN RADIO
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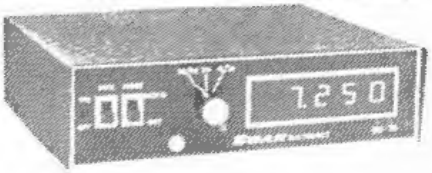

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amateur radio

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Cover Photo

Manning the portable amateur radio station (VK4WIR) to cover the WIA Capricornia Amateur Radio Festival in September '78 are, from left, Novice operator Peter Logan who is waiting to be allocated his call sign, Doug Kraatz VK4ZDK, and Gordon Adams VK4GM. (See the report in November AR.)

Photo courtesy of the Morning Bulletin, Rockhampton.

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Secretary — Mr. W. L. Gielis VK4ABG
Broadcasts— 1825, 3580, 7146, 14342, 21175, 28400, kHz; 2m (Ch. 42, 48): 09.00 EST.

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Broadcasts— 3570, 7130 (AM) kHz with relays on 2m Ch. 2 (5), Ch. 8 (N), Ch. 3 (NW), 28.56 (AM), 52.525 (FM), 144.1 (AM) and 435 (FM) MHz 09.30 EST.

NT:
President — Dick Klose VK8ZDK
Vice-Pres. — Barry Burns VK8DI
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Broadcasts— Relay of VK5WI on 3.55 MHz and on 146.5 MHz at 2330Z. Slow morse transmission by VK8HA on 3.555 MHz at 1000Z almost every day.

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VK3 — 412 Brunswick St., Fitzroy, 3065 (Ph. (03) 41 3535 Weekdays 10.00-15.00h).
VK4 — G.P.O. Box 638, Brisbane, 4001.
VK5 — G.P.O. Box 1234, Adelaide, 5001 — HQ at West Thebarton Rd., Thebarton (Ph. (08) 254 7442).
VK6 — G.P.O. Box N1002, Perth, 6001.
VK7 — P.O. Box 1010, Launceston, 7250.
VK8 — (Incl. with VK5), Darwin AR Club, P.O. Box 37317, Winnellie, N.T., 5789.

Slow morse transmissions — most week-day evenings about 09.30Z onwards around 3550 kHz.

VK QSL BUREAUX

The following is the official list of VK QSL Bureaux, all are inwards and outwards unless otherwise stated.

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VK7 — QSL Bureau, G.P.O. Box 371D, Hobart, Tas. 7001.
VK8 — QSL Bureau, C/- VK8HA, P.O. Box 1418, Darwin, N.T. 5794.
VK9, 0 — Federal QSL Bureau, 23 Landale Street, Box Hill, Vic. 3128.

QSP — Communication

(ACT OF IMPARTING [ESP. NEWS]; INFORMATION GIVEN; SHARING.) . . . . . The Concise Oxford Dictionary.

Listening to some QSOs, one is often astonished at the lack of knowledge about the WIA, exhibited, not only by members and non-members, but also by those who should know better.

The problem then, appears to be a communication stumbling block somewhere in the system, working, so it seems, both ways, executive — councils — members and vice versa.

After some six years on the council of the Queensland Division, I have come to the conclusion that the main stumbling block is usually the council-member-council network.

VK4 recognised the problem some four years ago and took steps to rectify part of the problem with the Institution of the Radio Club Workshop, which has just finished its fourth annual meeting. Its success may be measured by the fact that over forty constructive motions were presented and discussed by the affiliated radio clubs in Queensland.

Besides the direct communication link between council and club delegates, who, incidentally, represent some sixty per cent of the total WIA members in VK4, the federal councillor for Queensland is now able to state that his views at the federal convention represent the views of the majority of WIA members in Queensland.

Another direct communication link between council and radio clubs was established last year, the weekly radio club net whereby club representatives are able to have direct access to council and discuss problems, solutions and suggestions, without fear of misunderstanding or lengthy delays. We are happy to announce that this system works very well, something we, unfortunately, cannot as yet say about the council-member link, the Queensland net. But given time, it will work to the benefit of both the member and council.

These then, are but a few solutions Queensland is trying out to overcome one of the major communication stumbling blocks in a communication oriented hobby.

The necessary positive feedback is starting to come in from members, albeit very slowly, but it is nevertheless a hopeful sign that we are on the right track.

Next step is an effective inter-communication system between councils — we don't need one with the Executive, that is already satisfactory — and eventually we somehow could achieve Bob Arnold's idea, without losing our precious State identity.

Communications in times of stress (WICEN, channel 5A, channel 0) is near total, why not under "normal" conditions?

JOHN AARSSE, VK4QA
President, VK4 Division. ■

WIANEWS

This is the text of a letter sent to the Minister for Post and Telecommunications on 14th March, 1979 —

"Recent newspaper reports (Reference 1) compel the Wireless Institute of Australia, on behalf of the Amateur Service, to raise once again the whole issue of piece-meal approach to spectrum management in Australia and, in particular, the continued and planned use of TV Channel 5A.

Only in Australia, and nowhere else in the world, does a broadcasting allocation exist adjacent to the Amateur two metre band. The Institute seriously questions the wisdom of continuing to make use of incompatible frequencies for television broadcasting contrary to recognised international practice when compatible international spectrum is available but unused (UHF) (Reference 2).

From the information available, and in the light of recent investigations by amateurs and others in this country, it is obvious that the co-existence of amateurs and television broadcast stations on adjacent channels is a volatile combination (Reference 3).

The closure of amateur stations which may be alleged to cause interference to Channel 5A reception, as has been suggested (Reference 4), is considered by this Institute to be a dictatorial stand and unacceptable to the thousands of radio amateurs wishing to make use of their two metre spectrum allocation. This would be unnecessary if the broadcast spectrum were to be properly planned.

The Amateur Service has contributed, and is still contributing, to advances in technological and scientific areas and, on this basis alone, vigorously defends the tenancy of the two metre band — the only internationally exclusive allocation in the VHF and higher frequencies to 24 GHz, available to the Amateur Service and in particular the limited licensees.

Australia's contribution to the Amateur satellite programme is well known. It is iniquitous that Australia's amateurs should be denied access to an international resource merely because of a television station allocation unique to Australia.

The WIA therefore believes that, for the above reasons and for other sociological and technical reasons, the Channel 5A allocation should be withdrawn with the utmost speed and that all existing and proposed 5A services be transferred forthwith to UHF.

Reference 1: Hamilton Spectator 19/12/78 and 4/1/79.

Reference 2: ITU Radio Regulation 3580 (Footnote 279A) and Huxley.

Reference 3: Material supplied by Victorian Channel 5A Committee.

Reference 4: Letter from PM to VK3OT."

In a note circulated to Divisions on 7th with regard to WARC 79, the Federal President announced that in the Australian proposals for the work of the conference, it was proposed that footnote 3580/279A be modified to read —

> *"In Australia the band 137-144 MHz is also allocated to the broadcasting service for television until that service can be accommodated within the Regional Broadcasting allocation."*

This footnote presently reads —

> *"In Australia the band 137-144 MHz is also allocated to the broadcasting service for television."*

6m BAND

In his note the Federal President also advised that it is proposed to maintain the Region 3 allocation of 50-54 MHz with a modification of Footnote 3544/246 for Australia that the band 50-54 MHz is also allocated to the broadcasting service. At present, this footnote states that in Australia the band 50-54 MHz is allocated to the fixed, mobile and broadcasting services.

He also advised that Australia proposes the introduction of new world-wide exclusive amateur bands 10.1-10.2 MHz, 18.058-18.168 MHz and 24.15-24.35 MHz.

Australia, he wrote, proposes for 40m, an exclusive amateur band extending from 6.95-7.1 MHz and various additional allocations for amateur satellites in the existing SHF amateur bands between 2 and 11 GHz. No Regional or Australian change to existing amateur allocations were proposed.

The Federal President, it will be remembered, is Chairman of Committee 2 of the Australian Preparatory Group (APG) for WARC 79.

1979 FEDERAL CONVENTION

Mr. Ron Henderson VK1RH will be attending the 1979 Federal Convention in his own right as Federal Councillor of the ACT Division.

Additional Agenda Items for the Convention includes three from the SA Division relating to WICEN and one from the NSW Division on the same subject. VK2 also included an Agenda Item supporting the circulation of Convention Minutes to Clubs.

Since this newsletter is being written before the closing date for Agenda Items additional Items are expected to be submitted from both VK2 and VK4.

1979 CALL BOOK

Considerable discussion at Executive level, as well as in the Publications Committee, has been conducted in relation to the 1979 Call Book.

The unhappy situation reported in March WIANEWS has been resolved with most welcome co-operation from the P. & T. Department. Almost complete listings have been received for all months from May 1978 to January 1979. Details for later months are also promised.

So many complaints were received about the use of the computer prints used for the 1977 Call Book that typesetting for the 1979 Call Book will be used. Ways and means to keep the price of the Call Book below $3 are being closely examined.

For many years a demand has been observed for the publication of monthly updates or possibly the production of a mid-term supplement (i.e. 1980, etc.). Monthly updates in AR occupy space to the exclusion of other material unless the magazine's size is increased by additional pages at extra cost probably unsupported by additional advertising according to enquiries made. There are problems involved with producing a mid-term supplement, but these now appear capable of being resolved, at little extra cost, by the use of a word processor either commercial or in-house.

EXAMINATIONS

A meeting on 17th March chaired by Mr. G. F. Scott, the Federal Education Co-ordinator, and attended by experts from VK2, 3, 4, 5 and the P. and T. Department, produced an AOCP syllabus jointly agreeable to all parties. A small amount of residual work is required which should be finalised quite quickly. As a result, it now seems almost certain that the August AOCP theory exam will be multi-choice thanks to good co-operation shown by the Department. If this is achieved the marking of answer papers, even by computer possibly, will significantly reduce the delay of the past in announcing results.

The opportunity was also taken to discuss the Novice morse examination.

MEETINGS

Executive Meeting on 15th March also discussed the certificate sketches for the Ron Wilkinson Achievement Award, 1979 RD Contest opening address, Federal Treasurer, responses to WARC 79 appeals, workload of the Executive office arising from the greatly increased membership, the future production of AR and inter-related subjects, CCIR Seminar in Sydney, medallions for the 1979 VK/ZL/O Contest.

It was regretted that an NZART invitation to send WIA representatives to their annual Convention in June could not be accepted because of heavy involvement with preparations for WARC 79.

At the meeting of the Publications Committee on 6th March the 1979 Call Book production occupied much time to enable distribution to be made no later than about July or August, continued quality production of AR and the continuing need for photographs and technical articles.

Meetings of the VHF/UHF Advisory Committee on 27th February and 22nd March were occupied almost wholly in discussions on the Channel 5A situation and WARC 79 matters.

A routine meeting of the Federal Repeater Sub-Committee was held on 11th March. ■

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The Federal President wishes to extend grateful thanks to our advertisers for generous donations towards the expenses of WARC representation

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Editor's Desk

Bruce Bathols VK3UV

YOUR MAGAZINE — AMATEUR RADIO

LETTERS TO THE EDITOR

Sometimes the cat gets amongst the chickens — going on some of the letters we receive on varying subjects. Space for letters must be restricted to approximately one page, however, we endeavour to publish most of the letters received. The probability of early publication of your letters is inversely proportional to its length — i.e. the longer the letter, the longer it may take to appear. Please try to keep your letters to less than 250 words. If you want to criticise AR or the WIA, do it by all means — but in a constructive way. No "Waffle" — please!! We can only judge our performance by your remarks.

ARTICLES

We are always looking for original material, however, we are not averse to publishing an item which has appeared in other magazines/journals, should the need arise, or if we consider it to be of importance and interest to our readers.

Space preference naturally will be given to our contributors' items. To keep printing deadlines and to allow for forward planning, it is necessary to keep a ready supply of completed articles three months in advance. This leads us to several problems which have been experienced by some authors in delayed publication.

In attempting to cater for nearly everybody, we strive for a balance between technical and non-technical material. Our readership is over 15,000 (proven by various surveys) and with almost as many different views.

We have been criticised for not publishing material especially for novices. To the "knockers", we suggest you have a look at the "Novice Notes" column from time to time.

Remember also our policy is to publish "original" material where possible — if you want more in Novice items, put pen to paper and let us have your ideas and submissions.

With nearly 2,000 Novices in our ranks, the column should be self-generating — but why isn't it?

Only you have the answer.

PREPARATION OF MATERIAL

As mentioned previously in AR, articles do take several months before publication is effected.

On receipt of your article, the details are recorded and an acknowledgement sent to the author — usually within 10 days.

All technical articles are perused by our technical editors (in their spare time), and it is then returned to the editor for grammatical editing. Sometimes it may be rewritten completely, but the main theme is always retained.

Drafting of diagrams is carried out by our draftsman (in his spare time). Some drawings, particularly logic and PCB laybuts, take many hours of work.

The average time taken to prepare an article to the typesetting stage is three months from date of receipt.

Unless you are able to provide material and drawings to the standard AR readers demand, we ask you to bear with us a little while we do the preparatory work.

After typesetting, we must then arrange to "slot" the item in with previously prepared material, and to strive for our balance of material.

Please keep the articles coming in; don't forget Novice items and photographs.

The editor's lot is not a picnic, but it can be very satisfying.

73s until the next time I can spare a few moments to write a column.

B. BATHOLS VK3UV. ■

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LIST No. 2

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INTRUDERS

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VOX ADVANCE

Evan Jarman VK3ANI

One of the problems of VOX systems is the time lapse between the presence of audio and the completion of the receive to transmit switching. While this delay is minimal with the solid state switching in later equipment, many rigs still depend on a relay which only extends the delay.

One of the effects of this delay is the clipping the of leading syllable of each over. Operating procedures have evolved to disguise this problem. These include extension of the leading syllable and saying "Ah" until the relay has pulled in. While these methods are considered as "trade marks" to some, they don't blend with articulate speech.

An alternative, which is developed here, is to delay the audio until the VOX circuit has completed switching.

Delay concepts have been used in other facets of audio electronics such as voice scrambling, reverberation and telephone time compression. Methods of delay have ranged through tape loops, long echo tubes and springs, but they have always been mechanical. Because of their complexity or unwieldiness, little use was made outside of musical effects techniques. With the advent of audio delay integrated circuits these mechanical methods became obsolete. Now some of these delay line integrated circuits, called bucket brigade devices, are generally available.

The basis of operation of a bucket brigade device (BBD) is to sample the signal at finite intervals and pass these samples along a chain of capacitor FET stages. The sampled signal then appears at the end of the chain with a time delay set by the number of links and that finite interval (determined by a clock frequency).

Without delving too deeply into theory, any recurring wave such as audio, no matter how complex, can be resolved into a set of sine waves of varying frequency, phase and amplitude. This is the basis of Fourier analysis, after the French physicist Joseph Fourier (1768-1830). Also, any sine wave can be regenerated from a series of fixed values providing there are at least three values per cycle to work with. This means that the audio signal can be regenerated from the BBD output providing it yields at least three values, per cycle, of the highest frequency Fourier component. Of course, this is a theoretical limit for in practice about fifteen values, per cycle, are required for complete regeneration. This sampling, passing and regeneration is the basis of the BBD delay system.

The chip used is the MN3001, dual 512 link BBD in a 14 pin DIL package. It is made by Matsushita of Japan and distributed in Australia by the Elcoma division of Philips. One off lots can be purchased at Dick Smith's.

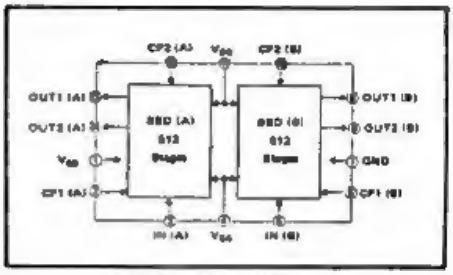


FIG. 2A: Block Diagram

Each link in the chain uses two FETs and a capacitor. It is wired so that in the presence of a clock pulse the capacitor's charge is revised to a value synonymous with the input. The tailing FET is a buffer allowing perception of the capacitor's charge with minimal interaction. Two clocking inputs are required (connected to

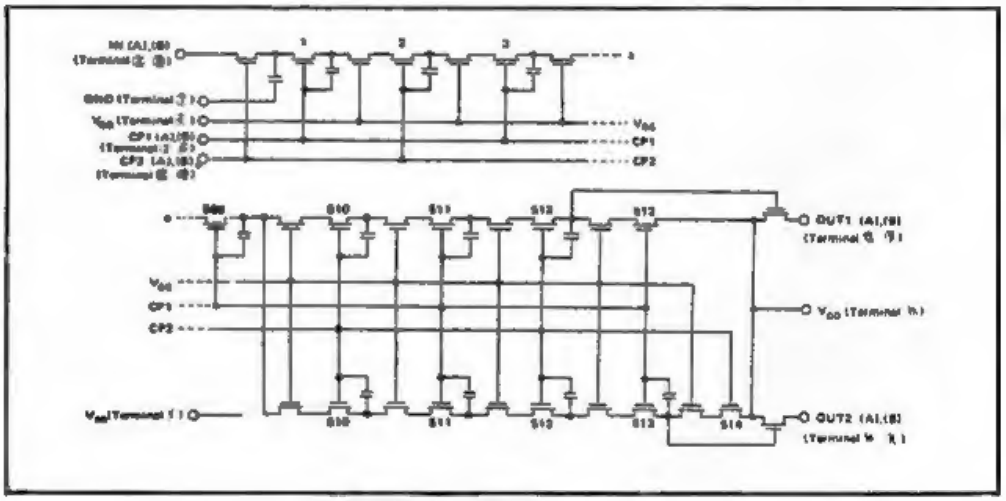


FIGURE 2B: Circuit Diagram

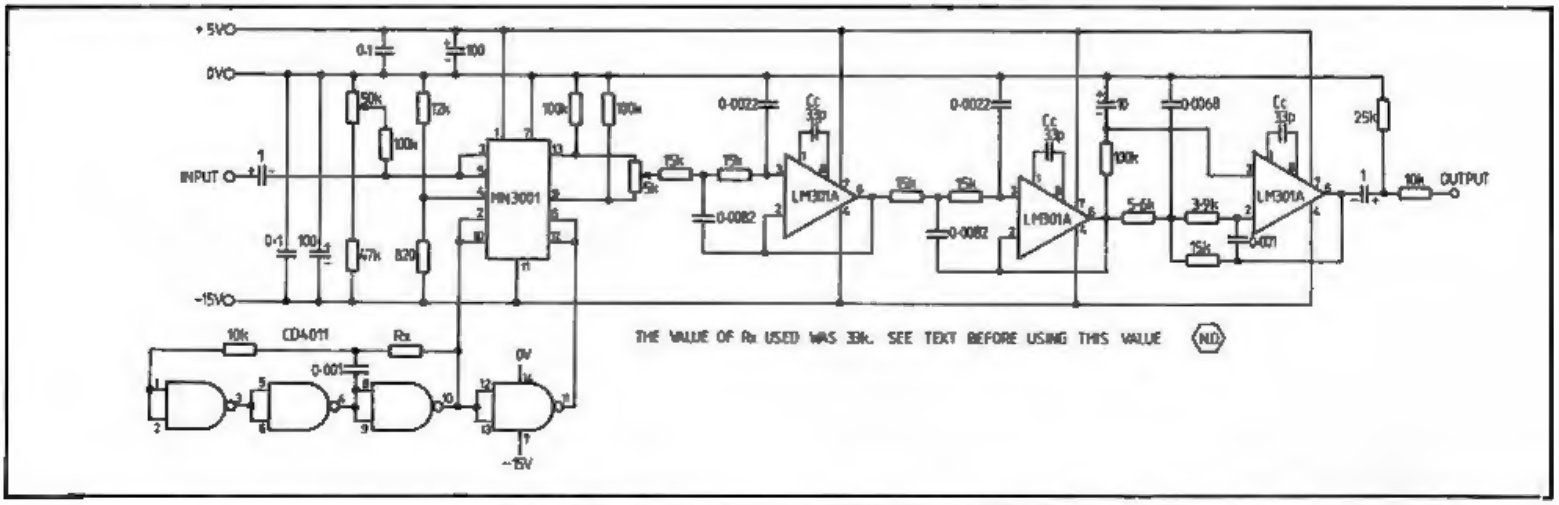


FIGURE 2: Schematic Diagram of VOX Advance Circuit

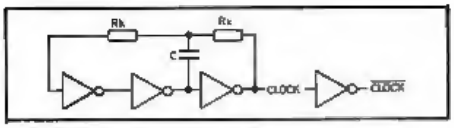


FIGURE 3

alternate links) to overcome the problem of revising capacitor charge while being read by the next link.

The chains operate in a master-slave form. While the clock is on, the first link (master) is set, and when the clock is off the second link (slave) follows the master. A separate not-clock, or anticlock, pulse is required to drive the slaves. Unfortunately as the master-slave requires two links, the number of effective links is half the actual number in the chain.

In the VOX advance the two chains are operated in a staggered parallel formation.

The parallel operation allows for higher bandwidth by passing a higher frequency Fourier component. This may seem a waste, but remember that relay type VOX systems have a greater delay than that which these chains normally cater to. Longer delays mean lower sampling rates and so imply reduced bandwidth

Operation in a staggered system means that the chains are alternately sampling audio. This is achieved by reversing clock lines to the second chain: clock becomes anticlock and vice versa.

The BBD does require a source of both clock and anticlock pulses; provided here by a CMOS logic oscillator. (Fig. 3).

The oscillator can use any inverting gate, or inverting combination of gates, however, due to pin configurations on the printed circuit board, only '4001 and '4011 chips can be used. As the inputs are tied together the difference in logic type is immaterial. The frequency of oscillation is

$$f\,clock \sim 1/2RxC\left(\frac{0.405Rk}{Rk + RX} + 0.693\right)$$

Further details can be found in National Semiconductor's AN118 (ref. 1). The complementary anticlock pulse is derived by passing the clock through the remaining gate.

The delay is indirectly proportional to the clock frequency; it equals the number of effective links multiplied by the clock period. So by using the frequency equation the delay can be expressed as:—

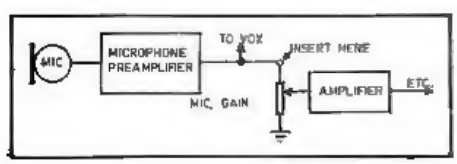


FIGURE 5

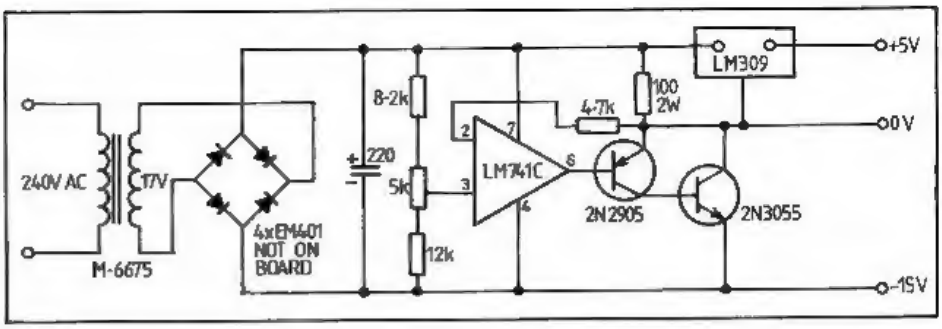


FIG. 4: Aux. Power Supply — Neutralisation Capacitors for LM309 not showing.

$$\Delta t = 512RxC\left(\frac{0.405Rk}{Rk + Rx} + 0.693\right)$$

The manufacturers specify a maximum delay of 25.6 msec.; probably due to capacitor leakage. On the circuit diagram I chose Rx as the frequency determining component. A plot of delay vs. Rx is included (Fig. 4) to assist choice of an appropriate resistor. Just remember that the actuation time of relays is 6 to 10 msec.

Although the staggered system eliminates the clock component from the BBD output, switching transients will still be present. These transients must be suppressed or they can lead to spurious emissions. The first two operational amplifiers, operating as low pass filters with a Q of 1 and a cut off of 2.5 kHz, achieve the suppression. If you wish to run an alternate pass characteristic, then I refer you to the good pragmatic discussion in the book by Hayward and DeMaw (ref. 2), page 80.

Suitable operational amplifiers are the LM307, uA741 and MC1439, all of which don't require the compensation capacitor (between pins 1 and 8), while the LM301 and uA748 can be used directly.

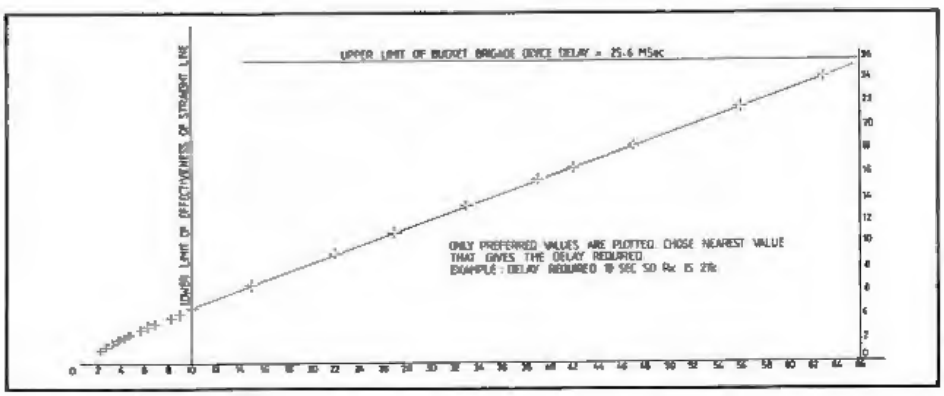
The last stage is an audio amplifier, with a gain of 8.5 dB, to compensate for the losses of the BBD. It, too, has a cut off frequency, but it is about the 6 kHz mark.

The MN3001 is a p-channel silicon gate device requiring a negative voltage; —15 volts. If you are unable to tap a source of negative voltage in the transceiver then an auxiliary supply will be required. In my example the voltage is split using an error amplifier referenced to a voltage divider. Although I used a 2N3055 due to a need for extra power for something else, a 2N3053 should be a satisfactory substitution. The 24 volts DC used to drive the system is arbitrary, although the LM309 will require at least 7 volts for good regulation. Drain on each supply is approximately 10 mA. The trimpot is adjusted to give —15 volts, the 5 volts being independent. See Fig. 4.

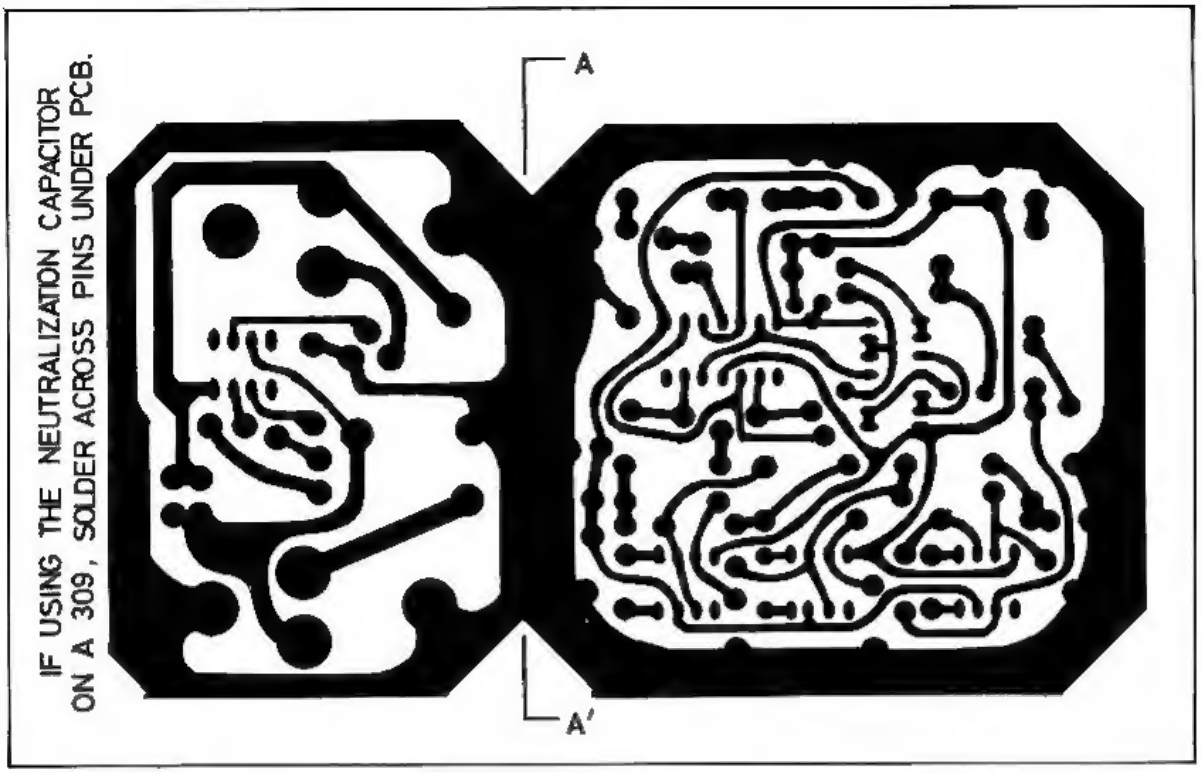
Of the transceivers I know, the audio input scheme seems to be as shown in Fig. 5.

The mic. gain, being a front panel control, is usually fed by wire from the audio board. The delay system is placed in this wire; I unsoldered the wire at the potentiometer. An extra point has been provided on the printed circuit board, in case the VOX line is soldered to the mic. gain potentiometer. Systems do vary so individual appraisal is necessary.

By the use of reverse logic the unit has been called a VOX advance. The advance can cope with most relay VOX systems for the average relay takes 6-10 msec. to actuate; maximum advance is 25 msec. The delay equation was quoted to allow tailoring to major variations. The VOX "delay" control will need trimming to accommodate the leading pause. Once the system is operational, please try to drop the opening flourish, or "Ah". Make clean articulate speech your "trade mark".



GRAPH: Plot of Delay (m/sec) Vs Rx (kilo-ohms)



LEFT:

Printed Circuit Board — Artwork — Full Size.

BELOW:

Component Layout for PCB.

REFERENCES:

1. National Semiconductors Application Note 118. Published in the CMOS Data Book, March 1975.
2. Wes Hayward and Doug DeMaw, Semiconductor Design for the Radio Amateur. ARRL 1977. (Available through Magpubs, see Book Review, AR 11/77.)

CALCULATED VALUES USED IN PLOT

$$\text{Delay} = 512\ RxC\left(\frac{0.405\ Rk}{Rx + Rk} + 0.693\right)$$

$C = 1.0$ nanofarads (1.0×10^{-9}F)
$Rk = 10$k ohm (10000 ohm)

Rx(k ohm)	1/2f clock(usec) 10^{-6}sec	Delay(msec) 10^{-3}sec
2.2	2.25	1.15
2.7	2.73	1.40
3.3	3.29	1.69
3.9	3.84	1.97
4.2	4.11	2.10
4.7	4.55	2.33
5.6	5.33	2.73
6.3	5.93	3.037
6.8	6.35	3.35
8.2	7.51	3.84
9.0	8.16	4.18
10.0	8.96	4.59
15.0	12.83	6.57
18.0	16.52	8.46
22.0	18.03	9.21
27.0	21.66	11.09
33.0	25.98	13.30
39.0	30.25	15.50
42.0	32.38	16.50
47.0	35.91	18.39
56.0	42.24	21.63
63.0	47.15	24.14
68.0	50.65	25.95 ■

A technical problem has arisen and to enable normal publication of this issue, the component layout for this item, will be published at a later date. Apologies to all concerned — Editor.

QSP

BLITZ ON CB RADIO IS PLANNED

The Federal Government is planning a blitz on CB radio users whose equipment interferes with television, radio and hi-fi reception.

They will face stiff fines and run the risk of having their equipment confiscated.

The tough regulations are part of a code the Government has drawn up to deal with CB troublemakers.

More than 23,000 complaints of CB users interfering with television and radio reception were investigated in 1977-78.

CB enthusiasts who use obscenities in their transmissions, broadcast false or misleading messages, or play music or advertisements will face prosecution.

The regulations were announced this week by the Post and Telecommunications Minister, Mr. Staley.

They follow a top-level review of CB radio operations and put new teeth into the Wireless Telegraphy Act.

From "Sunday Telegraph" 25-2-79. ■

ARRL EME COMPETITION

QST for September 1978 includes details of the first ARRL EME competition won by YV5ZZ. The only VK entrants was VK5MC operating on 2m. One entrant operated with a single 16 element yagi on this band but dishes seemed as popular as yagis, particularly at 70 cm. According to the November issue of the Propagator (Illawarra ARS) the University of Wollongong has now received the insurance money to cover the loss and damage of equipment and buildings at Dapto, so perhaps VK2ALU will be back on beam again before too long. ■

RETURNING THE 50-52 MHz ALLOCATION

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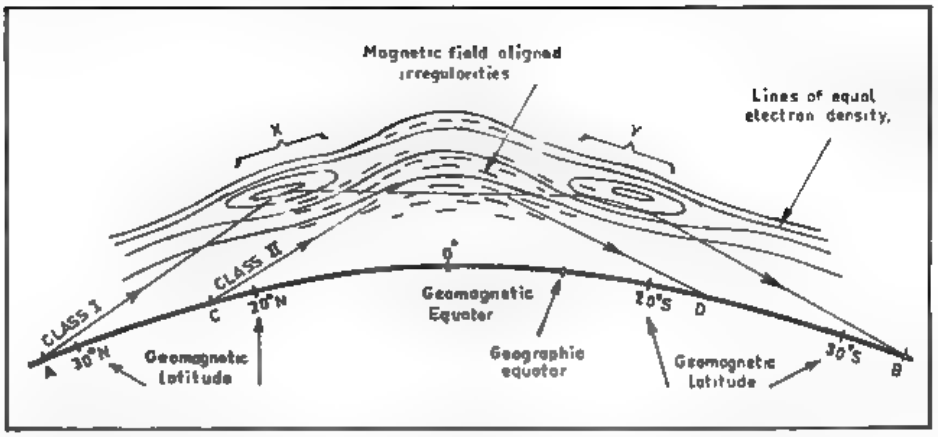
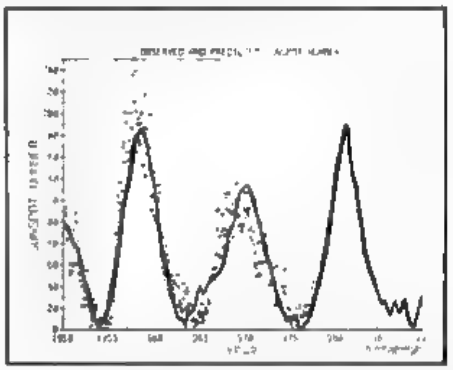
The existence of widely scattered amateur stations that may contribute to data gathering in propagation research would provide a broad statistical base on which to study and define the characteristics and morphology of certain (perhaps new) modes of ionospheric propagation in the Australian-Asian and Australia-Pacific regions in the lower-VHF portion of the spectrum.

The allocation of the 50-52 MHz would materially assist in this regard, providing knowledge that would be of importance not purely in propagation research, but perhaps of more pragmatic significance in the area of defence strategy.

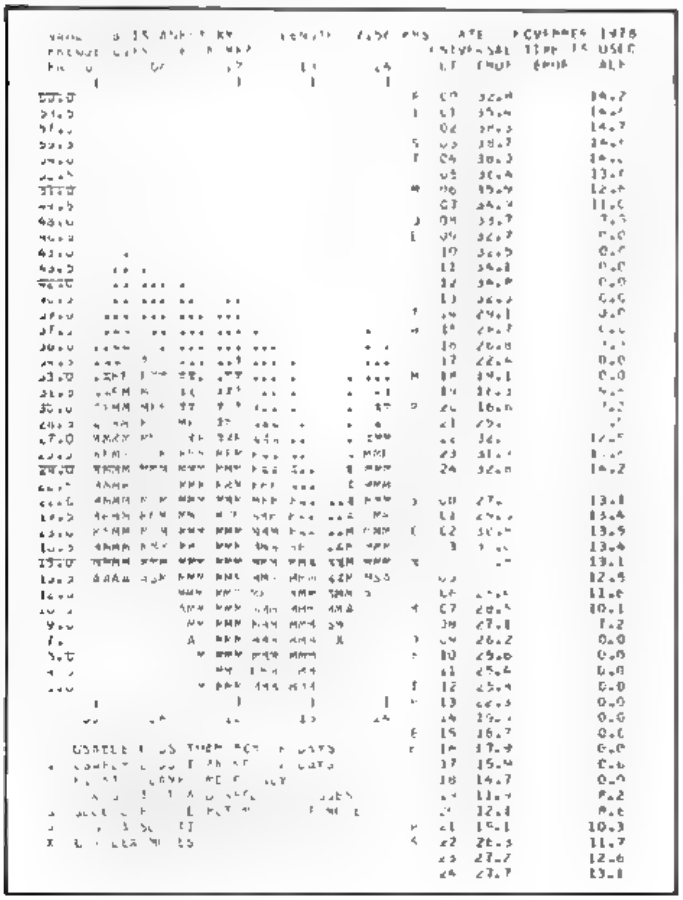


ABOVE — FIGURE 2: The generally accepted propagation modes for afternoon-type (Class I) and evening type (Class II) transequatorial propagation. The regions in the F-layer marked X and Y indicate the 'equatorial anomalies' that will support propagation into the low-VHF region of the spectrum.

RIGHT — FIGURE 1: Predicted sunspot peak in 1981 may be as high as that in 1958. The solid line gives the Fourier series model (after Hill) predicted from observations from 1749 through 1975. The + symbols show observed monthly sunspot numbers from 1950 to October 1977.



In a less rigorous scientific sense, the "discovery" of new modes of propagation and/or the extension of existing data records by amateurs using the 50 MHz allocation is a distinct possibility. Modern VHF amateur stations are equipped to a much higher technical standard than existed 20 years ago (even 10 years ago), there has been an increase in the number of amateur stations populating the 6-metre band and an increased awareness of the possibilities available for unusual propagation, particularly as we approach the maxima of sunspot cycle 21. The number and extent, and the geographical distribution, of ionospheric paths that may support propagation in the lower VHF region, that may be "explored" by amateur operators using the common allocation of 50-52 MHz (where all the "action" is on the 6-metre band) is now considerably greater than for the last maxima of 1968-69 and the previous one, 1957-58.



LEFT:

FIGURE 3:

Circuit prediction issued by the Ionospheric Prediction Service. This is a 'GRAFEX' style prediction; note that the frequency scale extends from 3 MHz to 60 MHz, a recent change in form as most GRAFEX predictions cover 2-40 MHz.

PROPAGATION RESEARCH

Research into Transequatorial Propagation (1), (2) has significantly advanced in recent years — hampered somewhat by the sunspot minima and the economic recession, and will undoubtedly get a boost over the period of the coming maxima. Much of the detailed morphology and geographical distribution of TEP is yet to be researched and there is considerable scope for research into the morphology of TEP in a number of geographic regions. It is known that TEP is geomagnetically sensitive in occurrence and distribution but only rela-

tively limited paths have been researched to date — Japan-Australia, USA-Argentina and Cyprus-South Africa receiving the most attention. The Australia-North Africa, Australia-Central Asia and Australia-Trans-Pacific regions suffer from a dearth of data.

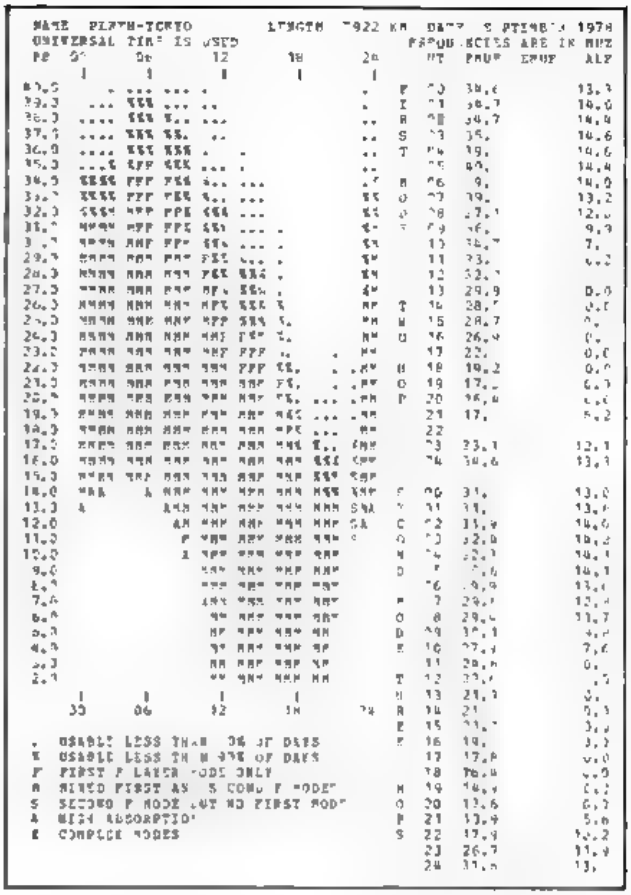
The morphology and characteristics of of Japanese Archipelago-Australia trans-equatorial propagation in the lower to mid-VHF region of the spectrum is reasonably well detailed and understood at present owing to fairly intense and continuous studies undertaken since the early 1960s, largely because both areas have "free" governments and co-operative scientific studies have taken place — occasionally involving amateurs who used the 6-metre band (3).

However, the morphology of trans-Pacific and trans-Indian Ocean TEP is almost totally uncharacterised at present . . . if it exists. We know that occasions of trans-Pacific 50 MHz TEP have occurred, however insufficient data is currently available to provide any reasonably detailed picture. Instances of trans-Indian Ocean TEP in the lower VHF region are exceedingly rare, dating back 20 or more years. A bigger "population" on 50 MHz in critical areas of the world (i.e., North Africa; Mediterranean — Cyprus amateurs have 50 MHz, India; South-Central Asia, etc.), including Australia, would almost certainly add sufficient observational evidence of unusual propagation modes for

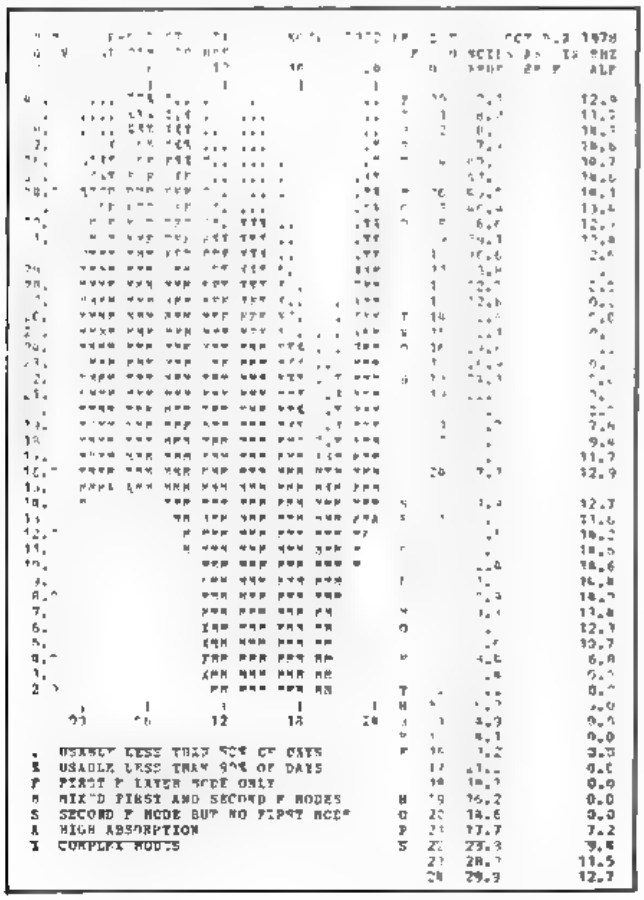
RIGHT: FIGURE 4A

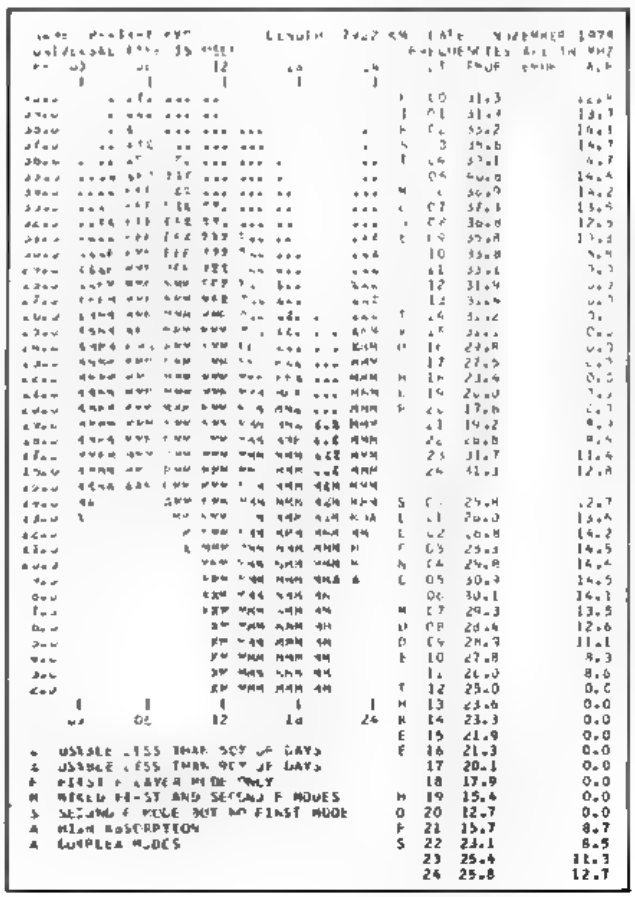
LOWER LEFT: FIGURE 4B

LOWER RIGHT: FIGURE 4C



FIGURES 4A, 4B, 4C: Perth-Tokyo predictions for September/October/November this year show a promising pattern. Note how often the 'ordinary' F-layer mode supports propagation beyond 40 MHz. Peak median MUF in October reaches 41.3 MHz — and that's for two hops! On less than half the days of the month it is predicted to go considerably higher.





scientific institutions to advance research further.

Some HF backscatter ionospheric sounder research carried out by Queensland University from Brisbane in the 1960s has provided about the biggest body of data in this area to date, but does not cover a sunspot maxima (let alone a maxima and minima) nor did it extend into VHF

Then again, research into propagation involving the southern "equatorial anomaly" of the ionosphere (which assists the TEP mode), which will undoubtedly assist 50 MHz propagation over odd paths in the southern hemisphere and certainly across the equatorial zone, is lacking. This zone of the ionosphere is important for a number of reasons — particularly in defence strategy as we shall see later. Complex propagation modes exist involving reflections from the equatorial anomalies of the ionosphere and the dense E-layer formations in the magnetic equatorial zone. These complex modes often support propagation in the lower VHF region, and have only recently been researched and identified. Further incidences of propagation, perhaps involving backscatter modes, in the 50 MHz region may provide additional research data or "jumping off" points for further research.

A recent (unpublished) paper by Ken McCracken VK2CCX, titled "Conduct of a Systematic Investigation of VHF/UHF Propagation Modes by the Amateur Service in Australia" (4), called "Project ASERT", details a method by which Australian amateurs may materially assist propagation research in a scientific manner. To the writer, the return of the 50-52 MHz allocation would greatly benefit this project.

The granting of 50-52 MHz to Australian amateurs would not only put them on parity with the same allocation in other areas of the world — particularly South Africa, South America, the South Pacific Islands, Japan and the US, together with efforts to have the allocation released in India and perhaps Russia, could materially assist research into the morphology of ionospheric propagation modes in the Australasian sector of the world.

Ordinary "extension" of F2 mode propagation (as propagates the HF range) is now routinely included in ionospheric predictions. Most 'GRAFEX" style (computer plotted) Ionospheric Prediction Service charts are now produced with a frequency scale spanning 2 MHz to 40 MHz. Recently, the IPS have been putting out predictions with frequency scales covering 3 MHz to 60 MHz! (See example.) Many paths show extensions of F-layer propagation beyond 40 MHz at present, and the picture will certainly improve as we approach the maxima. The Australian to Central Asia (Novisibirsk, Russia being the terminal) predictions are of great interest. Complex ionospheric modes are almost certainly involved in extending propagation at times and to frequencies beyond the purview of the predictions. Again, the 40-60 MHz region of the spectrum is important and a 50 MHz allocation, coincident with the allocation in other countries, would be an advantage.

DEFENCE SIGNIFICANCE

Research into TEP and the propagation characteristics of the equatorial ionosphere is particularly applicable to Australia in a number of practical ways, not just in "pure" research. And this is secondarily of importance in itself as money and resources for research projects is granted to those which have practical or "pragmatic" goals — particularly in the short term. A pragmatic benefit from the allocation of 50-52 MHz to Australian amateurs lies in the area of its possible contribution to defence strategy.

A research project such as Project ASERT could provide propagation data, as mentioned previously, on the lower VHF region for equatorial and transequatorial circuits to the north of Australia.

Over-the-Horizon radar systems (5), suitable for early defence warning for Australia, are affected by equatorial and transequatorial propagation. Although currently using the HF part of the spectrum, OTH radar systems may, in the future, extend into the lower VHF region. In any case "odd" ionospheric propagation modes uncovered in the 50 MHz region affect the HF spectrum as well and may be more easily identified at 50 MHz.

VHF propagation in the 30-60 MHz region is of defence significance in another way. Military VHF communications in the Central Asian-China-Japan region may be monitored at times of enhanced propagation. Indeed, this is already done. Contributions to the study of the morphology of VHF propagation in this area would clearly have a bearing on military communications surveillance activities. Again, the return of the 50-52 MHz allocation is a prerequisite to providing assistance to such research, perhaps through Project ASERT. Besides, it's apparent that, if we provide ample evidence of enhanced propagation on the lower VHF region in these parts of the world, defence communications is likely to move elsewhere owing to the possible decreased security!

FUTURE COMMUNICATIONS POTENTIAL OF 40-60 MHz REGION

The communications potential of the 40-60 MHz region has been explored in the past in a practical, but limited, way. An experimental VHF propagation warning system was run as a trial by the Australian Ionospheric Prediction Service during March 1972. Some amateurs may remember participating in the experiment. In the report issued by the IPS on this experiment, "An Experimental VHF Propagation Warning System", by L. F. McNamara, IPS-R18 (6), Dr. McNamara states that ". . . at times communications on transequatorial circuits can be achieved at frequencies as much as 20 MHz above the predicted MUF (maximum usable frequency)" (from the Appendix). In the summary to this report (page 13), Dr. McNamara makes a number of observations I consider of importance to my arguments in support of the return of 50-52 MHz. They read as follows:

"The long term predictions of the probability of occurrence of TEP modes on various types of circuit were found to be reasonably accurate, even though they were based on very little data. More accurate predictions can only be made *when more observational data have been obtained*." (My emphasis.)

"In retrospect, it can be seen that the TEP part of the WS (warning system) could be improved by.—

"1. Monitoring at Townsville all possible northern hemisphere transmitters operating between about 45-55 MHz and noting their frequencies, geographical locations and approximate signal strengths.

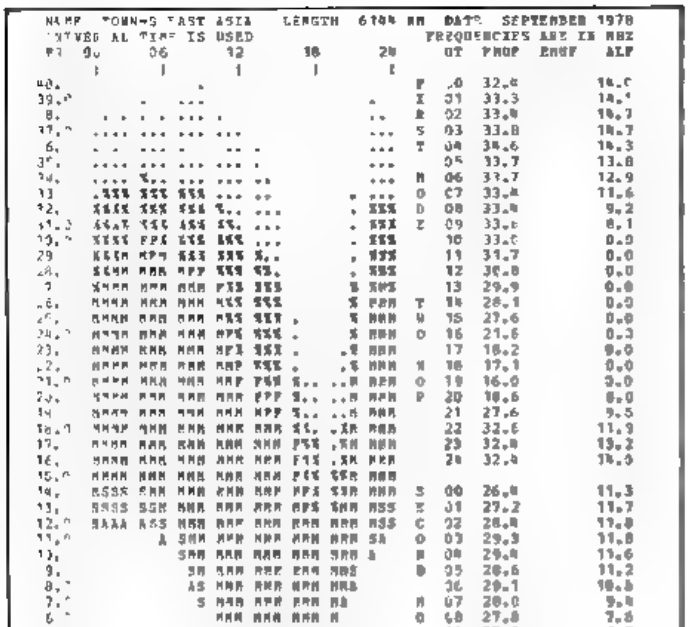
"2. Using the signal characteristics of the JA1IGY beacon (on 50.1 MHz) transmissions when they are received at Townsville to distinguish between the two possible TEP modes."

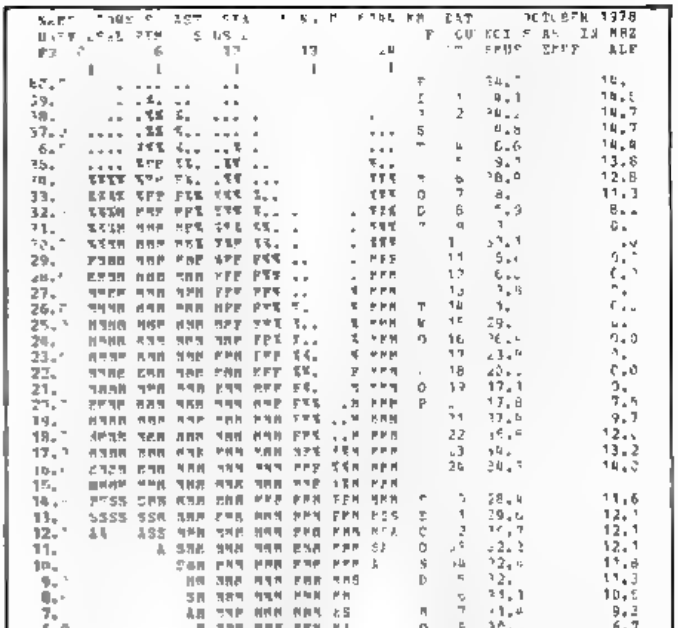
The significance of the 50-52 MHz band is readily appreciated. The assistance of Australian amateurs in this project was also acknowledged.

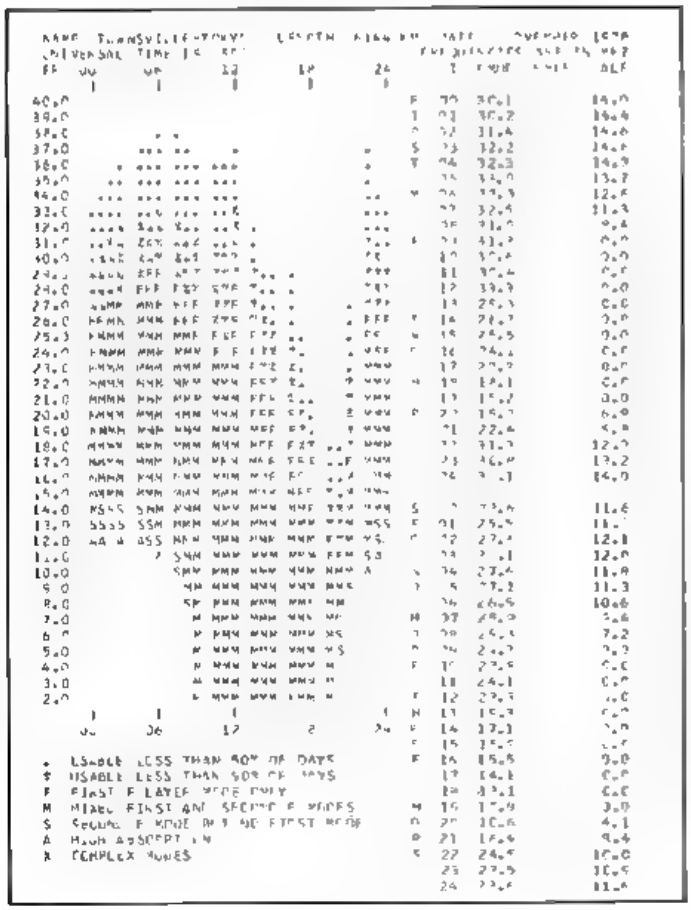
Mention of this warning sytem experiment, and how TEP can be used to improve signal conditions and reliability on transequatorial paths was mentioned in a paper by D. G. Cole and L. F. McNamara published in the March 1975 Issue of the Proceedings of the IREE (1). In section five of this paper, headed 'The Effect of Spread F on Ground and Satellite Circuits", Cole and McNamara say:

"If range spreading is present the transequatorial circuit performance can be improved in two principal ways. First, since the range spread is an indicator of likely VHF transequatorial propagation (TEP), *an increase in frequency up to the VHF band* (my emphasis) may allow propagation via the TEP mode. In this case the signal strength across the circuit will increase, to the extent that transmitter power may be reduced. A warning system using range spread as an indicator of TEP has been successfully tried."

By way of explanation, "Spread F" or "range spreading" is a phenomena observable on vertical-incidence ionospheric sounding equipment which plots the height variations versus frequency of the ionosphere using RF pulses reflected from the ionosphere. The record produced is called an "ionogram". When several closely spaced echoes are apparent over a range of frequencies and heights of the F layer reflection on the ionogram, spread-F or range spread is occurring. The phenomena is produced by the reception of multiple echoes over a range of near vertical







ABOVE LEFT: FIG. 5A

ABOVE RIGHT: FIG. 5B

LEFT: FIG. 5C

FIGURES 5A, 5B, 5C:

Townsville-Tokyo predictions for September/October/November also show a promising pattern. Here too, the 'ordinary' F-layer mode supports propagation beyond 40 MHz for part of the month. However, the median MUF in October peaks at only 39.1 MHz.

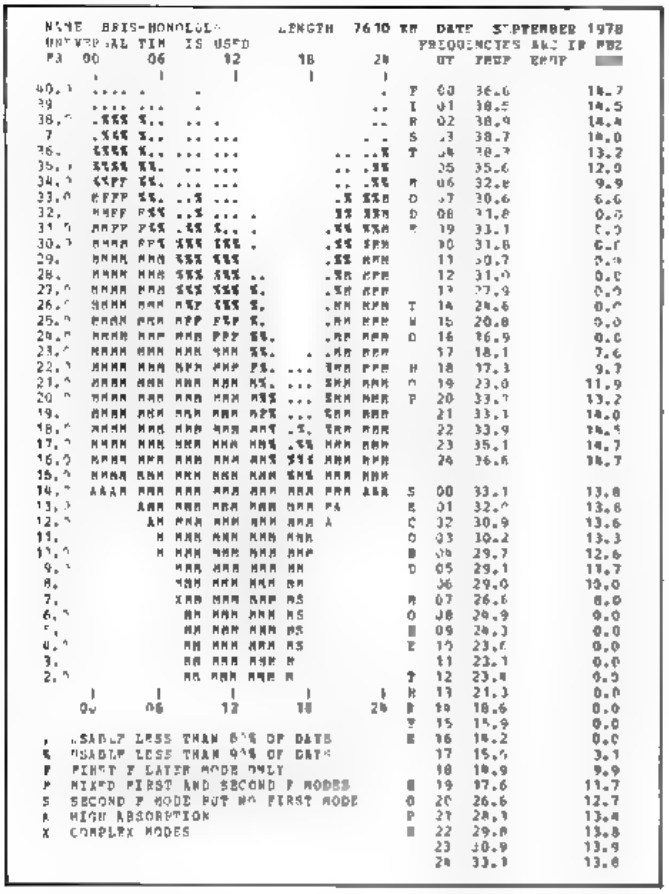
angles from discontinuities in the ionosphere. The discontinuities contribute to severe fading problems.

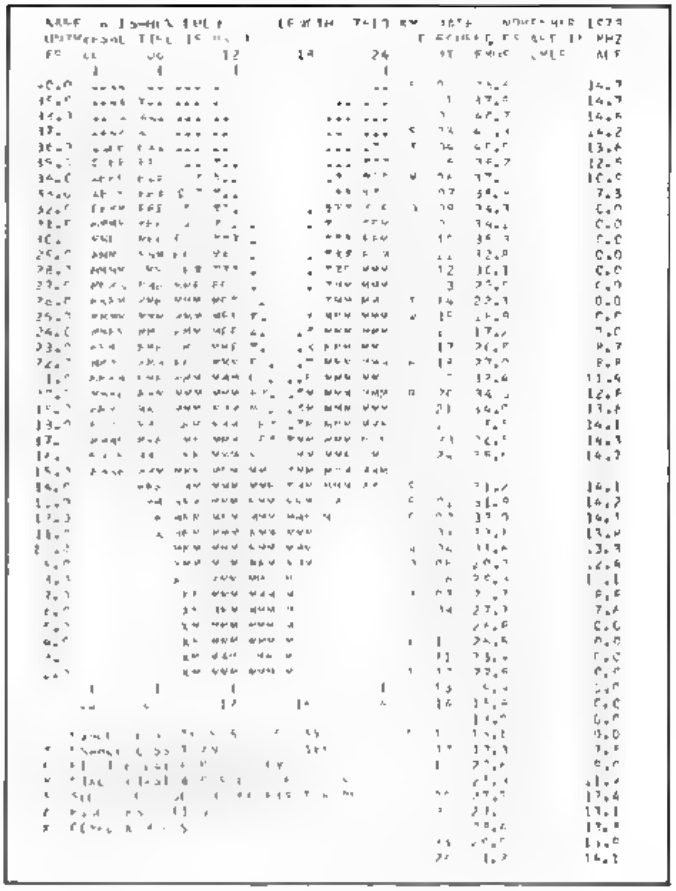
Correlation between signal characteristics on 21, 28 and 50 MHz would provide some observational and perhaps some quantitative data on the improvement possible as suggested by Cole and McNamara. Amateurs in Australia and Japan are ideally situated to provide such data. However, the 50-52 MHz allocation is not shared, although 52 MHz could be used. However, the incidence of TEP at 50 MHz is known to be greater than 52 MHz and more stations use the 50 MHz allocation in the northern hemisphere around the Japanese Archipelago.

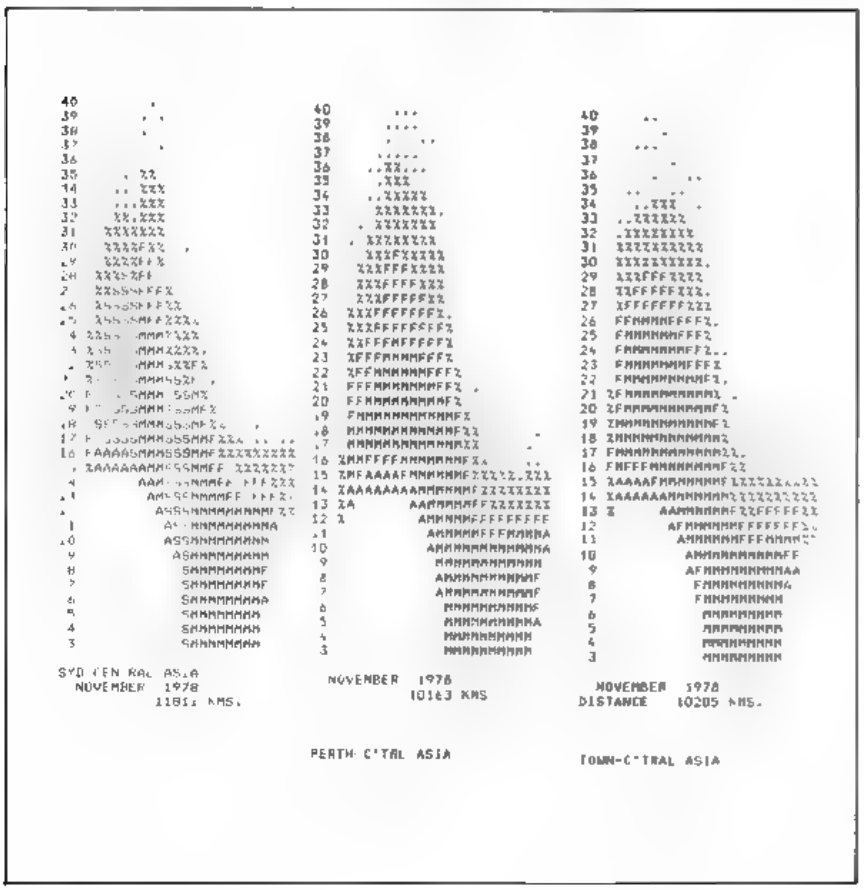
SUMMARY

The return of the 50-52 MHz allocation to Australian amateurs would materially benefit the Australian community, in defence, in scientific and in communications areas. The poor suitability of this region of the spectrum to television broadcasting use has been demonstrated on many occasions in the past and is likely to suffer increasingly as we advance towards the maxima of sunspot cycle 21. Returning 50-52 MHz to the Australian amateur service would serve a more useful purpose than maintaining it as part of a non-standard TV broadcasting allocation.

Putting Australian amateurs on a parity with other major nations and regions in







ABOVE LEFT: FIGURE 6A

ABOVE RIGHT: FIGURE 6B

FIGURES 6A and 6B: Brisbane-Honolulu is an interesting trans-Pacific path. Again, the ordinary F-layer mode will support propagation over 40 MHz. Peak median MUF in November is 41.3 MHz. Note how long the 'useable less than 50% of days' predictions cover 40 MHz.

LEFT — FIGURE 7: Propagation between Australia and Central Asia (Novisibirsk, USSR) is interesting and shows promise for the maxima years to come. Already, propagation beyond 40 MHz is possible on at least some days of the month.

regard to the 6 metre band allocation would see many benefits flow from such a decision in the years to come.

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2. "Evening-type Transequatorial Propagation on Japan-Australia Circuits" by L. F McNamara, Australian Journal of Physic, 1973, 26, 521-43.
3. "6-metre Amateur Contacts Between Australia and Japan", by L. F. McNamara and Roger L. Harrison, Ionospheric Prediction Service Series 'R' report R22 issued April 1973.
4. "Conduct of a Systematic Investigation of VHF/UHF Propagation Modes by the Amateur Service in Australia", by K. G. McCracken. The VHFAC is co-ordinating "Project ASERT"
5. "QTH-B, In Defence of Australia . . ." by Desmond J. Ball (ANU), Electronics Today International, February 1978, p. 35.
6. "An Experimental VHF Propagation Warning System", by L. F. McNamara, Ionospheric Prediction Service Series 'R' report R18 issued July 1972.
7. "Equatorial Propagation and the Occurrence of Spread F", by D. G. Cole and L. F. McNamara, Proc. IREE (Aust.), March 1975, pages 39-43. ■

LITTLE BOXES

One of the things which deters many experimenters who would otherwise build some equipment is the imagined difficulty in doing the mechanical work such as making a chassis and a box for the equipment they are building. I say imagined difficulty because it is often thought that to do sheet metal work one has to have an expensive workshop with all kinds of bending and cutting tools.

In actual fact, it is possible to make very good looking and perfectly functional boxes with the simplest of tools. Figure 1 shows how simple these tools can be. All that is needed is a couple of pieces of steel angle iron about 18 in. long, a clamp which can be bought at any hardware store (about a four inch clamp will do) and the kind of vice which can be found in practically every backyard garage. With these tools it is possible to bend aluminium sheet up to 18 gauge and if you want to use steel or galvanised iron, up to about 20 gauge. The sheet is simply placed between the angles as shown in Fig. 1 and the sheet is pushed over with one hand while the metal at the bend is gently hit with a hammer to work it over to a sharp bend. Fig. 1 shows the sheet of metal in position with the second bend completed. This particular box will have four bends and is about the simplest and most useful type there is. But it is not the only type of box which can be made. It is possible to make a wide variety of boxes and once you start you'll soon get the hang of it.

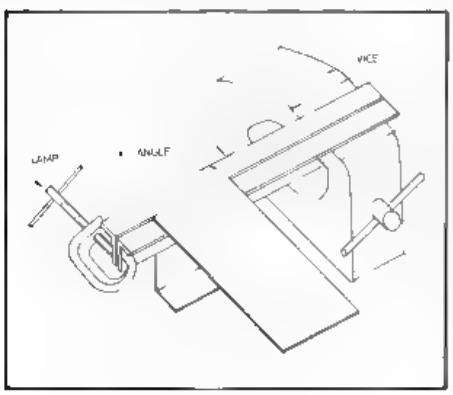

FIGURE 1

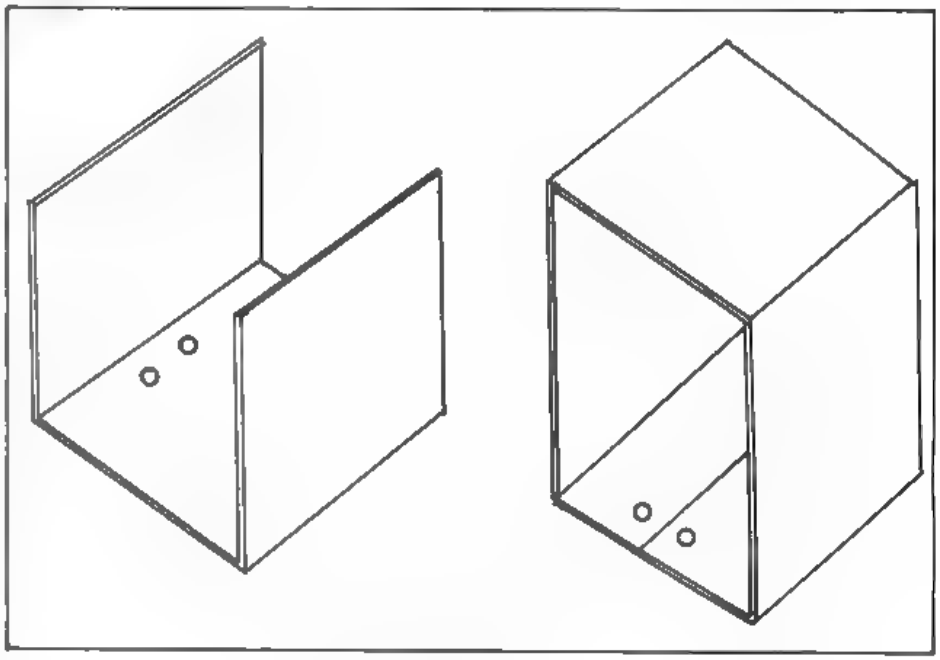

FIGURE 2

Fig. 2 shows the completed box. It is in two sections, one being the outer casing and the other the front and back panels and the chassis. You can see it is a very simple and convenient arrangement. Knobs and switches can be mounted on the front, and plugs and sockets can be mounted on the back and the circuit board or whatever can be mounted on standoffs on the main part of the chassis. The completed chassis can then be slid into the outer casing and a couple of screws through the outer casing into the chassis are enough to hold them together.

For cutting the metal the normal tin snips can be used but if you take the trouble to get a couple of old car springs and file the edges — they are not too hard to file — and bolt the springs to a couple of pieces of 3 in. x 2 in. hardwood you can make a first class pair of shears.

Another useful thing to know is that if you want to get a nice straight edge on a piece of aluminium sheet you can plane it with an ordinary wood plane as long as you are careful to take a very fine cut. The blade will not be damaged though it may need resharpening fairly often. Don't try the idea on steel or tinplate or you'll ruin the blade.

So don't be afraid to tackle sheet metal work even if you have only the simplest tools. There is nothing more satisfying than to see a home made box exactly the right shape and size, spray painted with an aerosol tin of hammertone or wrinkle enamel and have someone say, "Where did you buy that box? It's exactly the size I need.

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D8 70cm	twin 8el, 70cm, 12.3dBd gain, 1.1m	64.00
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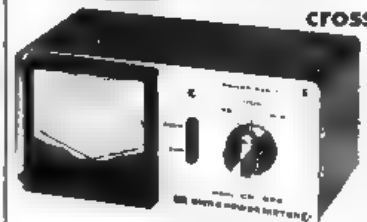

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A SIMPLE 10 GHz RECEIVER WITH TRANSMITTER OPTION

D. Evans G3RPE, and C. Suckling G3WDG

INTRODUCTION

During recent years amateurs have had much success with simple 10 GHz equipment. Usually this has consisted of transmitters generating a mere 1-20 mW, receivers using point-contact diode mixers and with an IF bandwidth of 100-200 kHz, and horn or dish antennas having gains of 20-35 dB. Provided that the equipment is operated to take advantage of low-loss propagation modes, such as that over line-of-sight paths or of super-refraction via ducts, then contacts over paths hundreds of kilometres long can be achieved virtually as a matter of routine.

Both calculations and direct measurements show that this size of equipment usually has a reserve of system gain of tens of decibels. This reserve means that it is not even necessary for the equipment to be working well for it to be successful; an overall efficiency of one per cent may be all that is required to cope with most low-loss paths. It also means that "compromise" techniques, such as the use of a Gunn oscillator as a self-oscillating mixer (and usually also as the transmitter), are quite satisfactory under these propagation conditions *provided* that the rest of the systems is working reasonably well.

However, for paths containing obstructions the path losses are normally very much greater. Losses 60-80 dB (1-100 million times) greater than those over unobstructed paths are not untypical. In order to work over these obstructed paths, the overall systems gain has to be correspondingly increased and it becomes necessary to start counting every decibel. The receiver described below, although it is simple to construct, is intended to be efficient at this level. An unusual feature is the flexibility of the design. Because of its particular configuration, a small amount of the local oscillator power is radiated and obviously this can be modulated and used as a transmitter. By a simple modification the output power can be increased if desired but at some expense of the performance of the receiver.

DESIGN AND CONSTRUCTION

The receiver is shown schematically in Figure 1. It consists of a simple mixer assemply which is connected directly to a Gunn oscillator of the type which defines its cavity by an iris. The mixer uses a length of waveguide into which is fitted the mixer diode, the hot end of which is decoupled and feeds the IF amplifier in the conventional way. Diodes of the 1N23 type are recommended; those with later prefixes (E, F, G) are preferred for their lower noise figures. The signal-input end of the guide can be of any convenient length, and it is fitted with a matching screw or screws to match the mixer diode to the waveguide. The length of the waveguide at the local oscillator end is critical: it needs to be made electrically an odd number of quarter guide wavelengths, i.e. $n\lambda/4$, where n is 1, 3, 5, 7, etc., as is convenient. This rear cavity is closed by the same iris as is used to define the Gunn oscillator cavity.

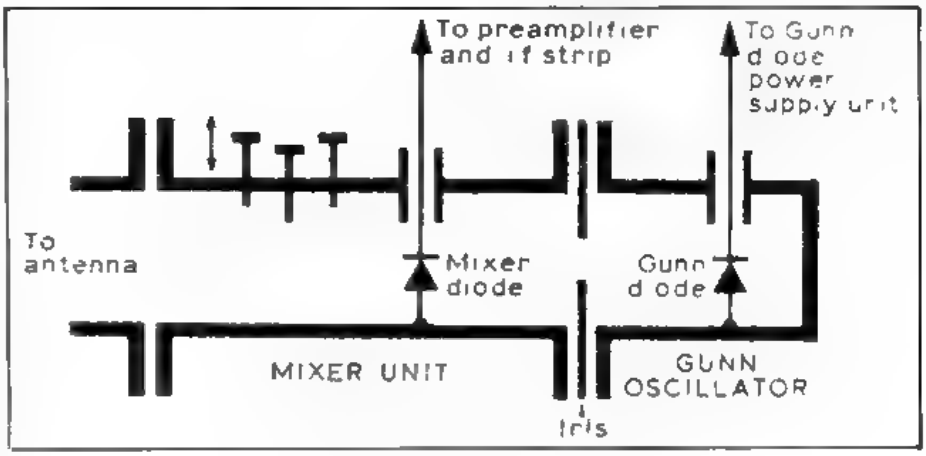


FIGURE 1: General arrangement of the receiver

A basic problem in the design of receivers is how to couple the local oscillator drive into the mixer while keeping to a minimum the amount of signal loss by its coupling with the local oscillator circuitry. A feature of the present design is that this isolation is provided simply by using the iris to undercouple the Gunn oscillator. Apart from the simplifying construction

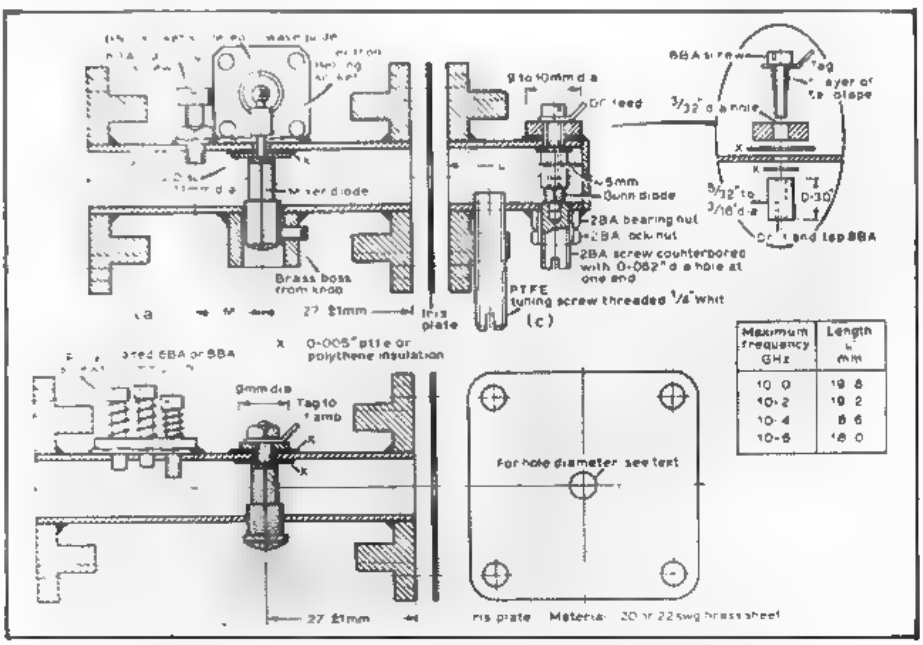


FIGURE 2: (a) One form of the mixer assembly. The single matching screw fits in one of two holes tapped close to the centre line of the guide, with the length M 11 mm for 10.0 to 10.1 GHz and 10 mm for 10.3 to 10.4 GHz. (b) An alternative configuration for the mixer. The position of the matching screws is not critical; they can be placed any convenient distance from the diode. (c) A modified design of Gunn oscillator.

compared with other methods of achieving isolation, for example by using a directional coupler, the present method has the important advantage of enabling the loaded *Q* of the Gunn oscillator to be significantly increased. This means that the stability of the Gunn oscillator is improved, which in turn raises the overall efficiency of the receiver.

PRACTICAL DETAILS

Two forms of the mixer assembly (which were developed quite independently) are shown in Figs. 2(a) and 2(b). Also shown as Fig. 2(c) is a recommended design of Gunn oscillator which is the G8APP design [1] with a fixed rather than adjustable RF short. A feature of the design given in Fig. 2(a) is that it requires the minimum amount of tools in its fabrication. Points that can be made with respect to its construction are:

(*a*) First drill a hole about 3/32 in. diameter centrally through the broad faces of a suitable length of waveguide 16 and open one of the holes to 0.25 in. diameter.

(*b*) Remove the brass centre boss from a knob intended to be used with a 0.25 in. diameter shaft by breaking away the surrounding bakelite. Fit the two flanges in their positions and solder these and the boss in a single operation. The latter may be jigged using a 0.25 in. drill. Note that the position of the input flange is not critical in any way, but that at the oscillator end it should be within about 1 mm of that specified.

(*c*) Drill and tap the holes for the matching screw. Remove the excess waveguide projecting from the flanges by sawing, filing and finally by grinding on wet silicon carbide paper backed by a sheet of glass. Carefully remove burrs from the inside of the guide, especially where the insulation is to be fitted.

(*d*) Carefully file away the lip from the mixer diode large connection (or from the adaptor if the diode is of the reversible type) so that the connection is uniformly 0.25 in. diameter.

(*e*) Drill the hole in the capacitor plate so that it is a tight fit on the diode pin. When assembling, press the diode against the wall of the guide before tightening the grub screw.

The construction of the design given in Fig. 2(b) is similar, but in this case the diode is bolted to the bypass capacitor at one end, while the other end is made a tight fit in the wall of the guide. In mixer diodes that are reversible it will be found that one connection pin is solid and, preferably, this is the one that is tapped. The pin is undersized for the 8BA thread specified, so the forces involved in tapping the thread are small: it can be done while holding the diode with the fingers.

The fabrication of the Gunn oscillator should present few problems. Constructional details are given in [1] if these are required. The heatsinking in this design is certainly adequate for the low power diodes which generate up to 20 mW and which dissipate about 1W. It is insufficient for high power devices which dissipate about 10W. Note that for many low-power Gunn diodes the connection with the flanges should be made negative.

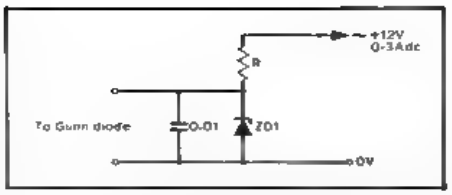


FIGURE 3: A simple zener diode PSU. The working voltage of ZD1 is normally 7-9V (see text)

ALIGNMENT

The preferred method of aligning the mixer is as follows:

(*a*) Connect the input of the mixer via a variable attenuator [2] to a suitable RF source, which can conveniently be the local oscillator to be used. Inject RF at *signal* frequency and adjust the matching screws to maximize the mixer current while, at the same time, setting the variable attenuator so that this maximum occurs at the optimum value for the particular mixer diode being used. For point contact diodes, a current of 250-500 μA is suitable. The matching screws should then be locked in position. During this operation, the rear end of the mixer cavity should be closed with either the iris to be used or by a blank plate.

(*b*) With the input connected to a matched load [3], and the Gunn oscillator fitted in its normal position, alter the size of the hole in the iris plate until the diode current is the same as that during (*a*). Obviously the size of the hole will depend on the output power of the oscillator but will normally be in the range 3-5 mm diameter.

In an alternative method used by G3WDG, the receiver is assembled with the antenna and waveguide run which is to be used. For initial tests an iris about 4 mm (3/16 in.) is suggested. The matching screw (in the appropriate hole in the G3WDG design) is then adjusted to set the mixer current at about 250 μA. If the current is greater than this, even when the screw does not penetrate into the guide, then the iris should be reduced in diameter. Conversely, if the mixer current obtained with up to the maximum recommended penetration of 3-4 mm is still less than the optimum value, then the size of the iris should be increased. If the size exceeds 6 mm, then there is a risk that the stability of the Gunn oscillator might be adversely affected. If the mixer current is still too low, then a fault in construction, a poor mixer diode or a badly-matched antenna should be suspected. The latter can be checked by substituting a large horn (or any other well-matched load) for the antenna in question. If correct operation is obtained, then the matching of the original antenna should be improved using, for example, another set of matching screws fitted to the antenna.

ALTERNATIVE CONFIGURATIONS

The critical dimension of the mixer assembly is the length of the guide between the diode and the iris. This was determined experimentally by fabricating an adjustable iris from 0.02 in. thick sheet 0.9 in. wide which was bent into the form of a square "U" with the base 0.4 in. wide. Using the set-up described under Alignment (*a*), the position of the iris, the penetration of the matching screws and the insertion loss of the attenuator were adjusted at signal frequency to peak at the optimum current for the mixer diode. It was found that moving the iris away from its best position by up to about 1 mm could be compensated for by readjustment of the matching screws. The value given in Fig. 2, 27 mm represents a compromise length between 10.0 and 10.5 GHz. It is

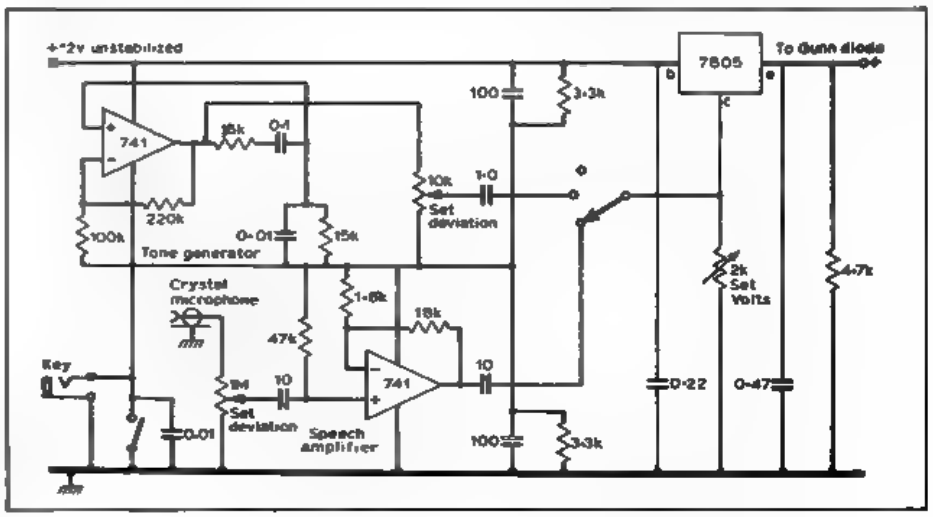


FIGURE 4: Speech amplifier and Gunn diode supply modulators

somewhat smaller than the values calculated for 3λg/4 at these frequencies, namely 29.8 and 27.4 respectively.

The same procedure is recommended if it were desired to optimize the mixer assembly at another frequency, or to lengthen the cavity by making it 5λg/4 or 7λg/4 in order to fit a wavemeter.

Other Gunn oscillators which employed an iris at the output flange can be substituted directly. Examples are given in [4]

As noted earlier, some of the local oscillator power is radiated from the antenna port and may be used as a low-power transmitter. By increasing the size of the hole in the iris plate the amount radiated may be increased to make the transmitter more effective, although the reduced Q of the oscillator cavity resulting from this change means that the efficiency of the receiver will be impaired. Despite this, the performance of such equipment should be competitive with that of most other transceiver configurations. The size of the iris should not exceed about 6 mm diameter, otherwise the stability of the Gunn oscillator may be seriously affected

POWER SUPPLY UNIT

The simplest practical PSU consists of a zener diode stabilized circuit as shown in Fig. 3. If, as in this case, the receiver local oscillator is not to be modulated, then the working voltage of the Gunn diode will be close to that which produces maximum power output. This can be checked by operating the oscillator via a variable resistor (e.g. 47 ohm 3W) from a 10V 0.3A DC supply, and using the mixer diode current as a power indicator. A zener diode of the optimum working voltage and 1W rating can then be fitted, and the value of resistor R set so that the zener diode passes 50-100 mA with the Gunn diode connected.

It is of advantage to be able to frequency modulate the receive local oscillator with tone since this enables CW signals to be detected. If there is a chance that the unit will be used as a transceiver, if only as a low-power spare equipment, then it is worthwhile also to build in speech modulating facilities. A recently developed circuit produced by G8AGN/G8ZCO is given in Fig. 4. A deviation of about 100 kHz is usually employed, this being suitable for standard broadcast FM components.

RECEIVER PREAMPLIFIER AND IF STRIP

One of the advantages of having a separate receiver is that there is a wide freedom of choice for the IF frequency. In fact almost any frequency can be used in principle since its value will be taken into account during the final calibrating process. With single-ended mixers of the type described above, there are advantages in using a relatively high IF in the region of 100 MHz. A convenient form for this can be a standard FM broadcast receiver, which may have limited AFC facilities built in — as well as a tape recorder. Some receivers of this type can tune 150 MHz, which is a useful IF in that the receiver can be made to tune 10,000-10,100 MHz on one channel, and 10,300-10,400 MHz on the other. Suitable preamplifiers using either BFY90 or 40673 devices are given in [5].

A useful check on the overall performance of the receiver is to measure the difference in its noise output when the antenna is pointed at the sky or at objects such as the ground. This technique is described briefly in [6].

REFERENCES

RC — Radio Communication, M — RSGB VHF/UHF Manual, 3rd edn

[1] *RC* February 1976, p. 123.

[2] *RC* December 1972, p. 280 also *M* Fig. 8.39.

[3] *RC* December 1972, p. 741; also *M*, Fig. 8.36 and 8.37. Horn antennas normally represent a well-matched load.

[4] *RC* May 1974, p. 288, Figs. 6, 7 and 8. Figs. 7 and 8 are also shown as Figs. 8.52 and 8.53 in *M*. Also *RC* September 1976, p. 667, Figs. 1 and 2.

[5] *M*, Figs. 8.74-8.78.

[6] *RC* July 1972, p. 541.

Reproduced from "Radio Communication", June 1978. ■

THE 1979 FACT SYMPOSIUM

The "Future Amateur Communications Techniques" Symposium, held in Sydney in May last year, turned out to be one of the most important events in amateur radio for 1978. The success of this venture has created a demand for a "return" performance.

Accordingly, the 1979 FACT Symposium will be held over the long week-end of 29, 30 September-1 October this year at a venue in Sydney, to be announced.

This year's FACT Symposium will again be organised by Roger Harrison VK2ZTB, and the NSW VHF and TV Group Committee

CALL FOR PAPERS

The organisers invite any amateurs, or interested perons, wishing to present a paper at the 1979 FACT Symposium to present a written abstract or synopsis on a topic of your choice — but related to communications techniques — to the committee by or before 30 May, 1979. Successful papers will be judged on originality, Informativeness, possible future importance and amateur applications.

It is intended to publish the Symposium Papers before the event this year.

To enable interstate amateurs, who may not be able to attend, to contribute to the Symposium, the committee invites abstracts from authors who, if accepted, would be invited to submit a paper for publication in the Symposium proceedings.

For further information, contact the FACT Symposium Committee, C/- 14 Atchison Street, Crows Nest, NSW 2065. ■

ALL-BAND SCRAMBLE: COUNTRY STYLE

Not bad weather for a field day?
It's pretty good I guess!
What with jokers down from the country
It'll be a great success.
There's a couple from up country —
by their looks it's Dad and Dave.
Heck! They're in the all band scramble —
this'll be a rave!
By the looks of their equipment,
it oughta be condemned
I'd like to see that rig receive —
Let alone it send!
That tuning gang is driven by
a length of cycle chain,
wrapped aroun' a stick of wood!
They gotta be insane.
They're not using coax for their feed·
they're using some barbed wire!
Their SWR must be near 10 to 1
And if it ain't — it's higher!
They've gotta couple of tractor springs
and using them for coils.
And every time they switch to CW —
The electrolytic boils!
For valves they've got a few light globes —
and it would be my guess
That the first valve that De Forest made,
Is somewhere in that mess!
They don't use gens or batteries.
Or anyth.ng else as subtle!
For volts, they light a big log fire —
and heat a thermocouple!
Hey, mate! It's about to start.
Let's watch these country blokes
I'd bet a monkey's uncle —
They'll be good for a couple of ,okes!
Geez! Lookit that bloke pound the brass —
close to twenty words a minute!
At the rate he's making QSOs -
no one else is in it!
Great Scott! He's won the thing!!!!
with sixty-five or more.
an' none of them fancy amateurs —
comin' anywhere near his score!
I reckon I'll chat these blokes
and tell 'em what I've said.
'Bout them crummy commercial rigs
and how 'ome brew leaves 'em dead!!
—From Westlake R.C. Newsletter, Dec 78. ■

ISLE OF MAN

GD3PBD

A new prefix "GT" will be used during the period 0001h BST on 30th June 1979 to 23.59h BST on 8th July 1979. Many expeditions to the island are expected which will boost the efforts of the resident 50 or so licensed Manxmen. The Isle of Man Amateur Radio Society asks visitors to send them details as advice and assistance will be readily available; write to GD4FWQ, 20 Terrence Avenue, Douglas.

Rad. Comms., Jan. '79

The use of this new prefix is to mark the millenium of Tynwald, one of the most ancient legislative assemblies in the world. This comprised the King, two lawmen (later termed Deemsters), 24 Keys and the Freemen or Folk as fashioned on the Norse system of government when the island was conquered by King Orry — Godred Crovan. Tynwald is also remarkable for the retention of so much of its original form, procedure and ceremonial. Today, almost a thousand years later, it comprises the Lieut.-Governor representing the Sovereign, an appointed Legislative Council and an elected House of Keys.

Tynwald is not subject to the British Parliament (except in matters previously agreed between the two) but to the Sovereign. It enjoys legislative independence and the right to order the civil, judicial and financial administration of the island. A ceremonial is held each year on Old Midsummer Day, which is now July 5th, on Tynwald Hill, St. John's near Peel.

Mannanin Veg Veen, Mona of the Romans or Man is indeed a tiny island in the Irish Sea. From the top of Snaefell, some 900m high, five countries can be seen on a clear day as well as the rolling green hills of the island with its tree-clad glens. The climate is generally much milder than surrounding areas and helps to explain the main industry of summer tourism, assisted, no doubt, by the Casino. The island is even more famous for the international Motor Cycle TT races (dating from 1904) in August, during which many of its roads are closed to all other traffic.

On the way from Douglas to Castletown the road crosses a small creek where all visitors should salute "the little folk". Perhaps its long history of severe hardships, conquering hordes and periods of isolation has much to do with superstitions. Nevertheless, Manxmen are proud of their island, of their beautiful music — especially Ellen Vannin, by Eliza Craven Green, of the early 19th century — and their service "to King and country".

Manxmen can be found in most places as their names testify — Christians of Pitcairn Island from the Bounty, Quayles, Caines, Clagues, Kennaughs, Quilliams, Kellys and many more. Perhaps as famous are Manx cats and the three legs of Man emblem.

Nearly 30 years ago I worked a GD station but no way could I get a QSL card out of him as I needed it for some award or other. I even sent him cards made out ready for him to sign and return in the envelope supplied with IRCs. It took the visit of a friend of mine, some 12 years later, to collect it in person. That was an exceptional case, because the last time I joined in the Isle of Man ARS monthly meetings the talk was about QSLing during the excellent teas we enjoyed. A fine island, full of beauty, history and charm. ■

EARLY DAYS IN RADIO

E. C. Reading VK2LT
"Kamak", Duncan Rd., via Lismore 2480, NSW

As a result of our "Early Days" request from "Old Timers" on amateur activities in the years 1925-1935, the author has submitted the following story.

"My present call sign is VK2LT, which I got in 1963, having caught the bug again.

Owing to pressure of work and other hindrances I let my previous licence lapse (2RG) from 1925 to about 1929, my old licence was dated 14-2-1925, Certificate No. 67, signed by Radio Inspector W. T. Crawford, Chief Manager J. Malone.

I was fairly active during 1925 to 1927, was living in Bangalow then, not far from the sea

In about the years 1920 to 1921 I built a small two cylinder engine with the help of my brother, who was with an engineering firm in Brisbane. The machining of some of the parts such as the crankshaft and boring out of cylinders was done in Brisbane, the rest was done by myself on a small lathe, which was also made mostly by my brother, and finished and put together by myself

I became interested in radio in about 1921-1922, made several receivers, picking up 2FC and 2BL, and entertaining the local townspeople, several of whom got me to make them a BC receiver. From then on I became interested in Amateur Radio, making several receivers, mostly picking up morse from ships, which helped me a lot to learn the code.

When I obtained my radio licence and was able to use a transmitter, I got on the air, using batteries for a power supply for a while. I then made a generator for the HT supply, which was connected to the two cylinder engine; it generated 800 volts 2 amps DC, and using batteries for the LT supply. I was on the air with the 50 watt Radiotron valve I used this until the AC power was connected through to Bangalow.

I was fairly active during 1925 to 1927.

Unfortunately none of the gear used has been kept. I have a few QSL cards. I think the best of the cards are at the Richmond River Society's Museum in Lismore. QSL cards still in my possession are: America (6AZY, 6CHY), Australia (8) VK2s, (6) VK3s, (4) VK5s, (4) VK7s, had more but they have been mislaid over the years, also (10) New Zealand cards.

My first receiver was 3 coils, 4 valves; transmitter 1 valve (200). Later the transmitter used a 50 watt Radiotron valve, Hartley Circuit Power Supply, home-made transformer, stampings cut out with snips and trimmed up with a file, etc., 800 volts HT. The rectifier was a number of glass bottles filled with 20 mule team borax with electrodes of lead and aluminium. They were a beautiful sight, a lovely blue colour when the key was pressed. Wavelength 35-80-87 metres, aerial 35 ft., with 4 wires, 40 ft. fan-shaped counterpoise. Receiver used then low loss 3-coil, 2-stage AF. Later used Phone, using carbon mike; contacts mainly VK2s.

I have belonged to the local Summerland Radio Club since it began and am active on VHF using a Multi 7.

I have made several caravan trips around Australia In 1967 used a Swan 350 with helical whip aerials, 20, 40, 80, and made many contacts and friends on the way. I was in contact with VK2BU, Newcastle, who kept our daughter, now at Raymond Terrace, informed of our progress, etc., and don't think we missed a "sked", mainly on 40 metres at around 7 p.m."

Editor's Note: Contributions from OTs regarding their early experiences, etc., around 1925-1935 (or earlier and later) are most welcome. (VK3UV.) ■

NOVICE NOTES

TESTING CAPACITORS FOR LEAKAGE

Gil Sones VK3AUI

Many capacitors found in older receivers and in TV sets being stripped for parts are leaky. However, the leakage is often not evident at the low voltage used by a conventional ohmmeter.

A simple check can however be made using a neon tube and a series resistor if a source of between 200 volts and 400 volts DC is available. Only a very small current is required to produce a glow in the neon tube. Thus leakage current and breakdown at typical working voltages may be readily found.

When the switch is pushed the neon will light and then extinguish as the capacitor charges. The duration and intensity of this charging flash gives an indication of the capacitance of the capacitor

1000 pF to 0.01 mF charge quickly with a small flash which may be easily missed

0.1 mF charges with a noticeable flash.

1.0 mF charges with a very noticeable flash

Thus you may also roughly gauge the order of the capacitance with a little practice.

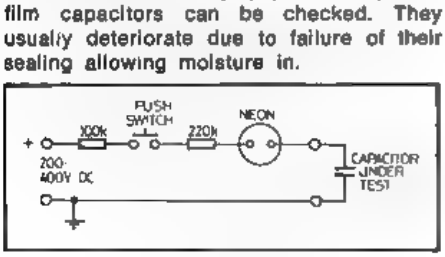
If the capacitor is leaky the neon will pulse rapidly if very leaky and slowly if leaky.

If the capacitor breaks down under voltage the neon will remain alight continuously.

Electrolytics cannot be tested in this manner as they depend on some leakage current to maintain their dielectric film.

Small disc ceramics are generally of too low a value. Also discs often fail due to plating flaking off the ceramic and so reducing capacity.

However the many paper and plastic film capacitors can be checked. They usually deteriorate due to failure of their sealing allowing moisture in.

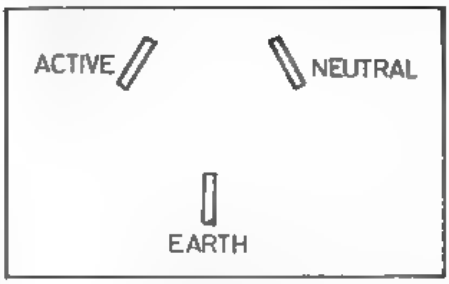


Capacitor leakage tester

With a little practice you will become quite adept at sorting out the good ones. At about the same time you will probably be able to predict from the look of the capacitors which ones are crook. This skill used to be put to good account by TV servicemen in fixing up the older style of TV sets. ■

AC MAINS PLUG CONNECTIONS

Australian Standard AS3000 recommends that when viewed from the front of the outlet the pins should be Earth, Active, Neutral when rotating in a clockwise direction.



AC mains outlet

The cord flexible conductor colours are —

Active — Brown.
Neutral — Light Blue.
Earth — Green or Green/Yellow.
Older electric cord colours were —
Active — Red
Neutral — Black.
Earth — Green. ■

☆ ★ ☆

ONE FLASH AND YOU'RE ASH

JOTTINGS FROM WESTLAKES RADIO CLUB

Young members visiting the clubs for the first time get some wild ideas.

Back in the early days, one 12-year-old was very upset that he didn't get on with building his TV receiver in the second lesson!

The whole idea of attending the radio club at all is to learn the disciplines of electronics. Discipline is "doing as ordered"

Now nobody is going to order you about as if you were on the parade ground.

But all the experienced members will tell you that it is dangerous to assume that because you are a radio club member you will automatically know all about electricity.

The funny phrase, "One flash and you're ash!" is all too true when one thinks about mains electricity.

Mains electricity is present at the mains three-pin socket on the wall; inside the TV set, the radio set, the toaster, the mixer, the shaver and all other electrical appliances.

You can't see mains electricity and this is what makes it so dangerous.

A spider or a snake or a shark *look* dangerous, so you keep out of the way of them if you are wise.

But mains electricity is much more dangerous than all of them and you can't even see it!

Then what should you do?

It is just as stupid to be afraid of mains electricity as it is to think that it's harmless.

It is much better to treat it with *respect*. Make it your servant but *never* assume that it is your friend, because mains electricity can kill you

I'll tell you a true story about how dangerous it can be.

Years ago, when the club was very young, one member, about 13 I suppose, mistakenly thought that because he had had a few lesson in the Elementary class he knew all about wiring up a three-pin plug

His confidence nearly caused the death of his father

The house in which he lived had been wired so that a power point on the wall had no switch. This was dangerous in itself but that's only part of the tale.

This boy, thinking that he would do a good turn for the family, set about putting a new plug on the mains lead to the refrigerator. He just connected the three wires to the three pins.

If you think about it mathematica y, you can imagine that there would be many ways to do it and still finish up with some degree of safety. But this boy connected the red active lead to the earth pin. His father arrived home just as he finished. He took the lead from the boy because he didn't know about these things e ther. He plugged it in and reached for the door handle to see if the light came on. Fortunately, someone pulled out the plug soon enough. But it could have been fata

DON'T DO IT UNTIL YOU HAVE BEEN SHOWN HOW.

From Westlakes RC Newsletter, February 1979. ■

BOOK REVIEW

RADIO FREQUENCY INTERFERENCE

HOW TO IDENTIFY IT AND CURE IT

With the amount of electronic equipment installed in the average home increasing every year the identification of RF and its elimination e becoming more important. This ARRL booklet will show you how to identify the interference find its source and suggest means for its elimination — often in the equipment being nterferred with, sometimes in the transmitt ng device

For many years the producers of electron c power generators have been conscious of the need to produce equipment to a high standard which does not produce "spurious' outputs.

Makers of reproduction equ pment have, in many instances, because of a desire to produce such equipment at low cost, been prone to overlook the effects that a nearby source may have upon their products

All aspects of the prob em are dea t w th in this sixty-four page publicat on

Publisher The American Radio Relay League Inc , Newington. Connecticut, USA

Available from Magpubs — price $2 60 ■

NEW ATLAS 110 LINE

• 250 WATTS • $499 • 80–10Mx •

***RX/TX-110H Transceiver** $499*
***PS-110 Power Supply** $109*
***MM-110 Mobile mount** $68*

Now for only a fraction of the outlay previously necessary you can run up to 250 Watts on 80 thru 10 Metres, work CW or SSB, operate from the Car, or home QTH using the RX/TX-110H and its AC Power Supply, PS-110.

For color brochure with complete specifications write to us, phone us or just drop in and have a look at the RX/TX-110.

At GFS, Australia's Atlas agents, we are proud to introduce a real breakthrough in HIGH POWER, LOW COST, amateur transceivers.

First came the receiver, The Atlas Rx-110 A performance plus Amateur Band Receiver incorporating high sensitivity selectivity and dynamic range Couple that to a "bolt-on" Transmitter Module, the Atlas TX-110H which has low spurious and harmonic radiation, high carrier and unwanted sideband rejection and 250 Watts in-put. You now have the unbelievable Atlas RX/TX-110H top performance transceiver which costs NOT $950 NOT $750 NOT even $650 but just **$499**

• • • • • • • MORE OUTSTANDING FEATURES • • • • • • •

- **Frequency Coverage** 3.5-4.0 MHz, 7.0-7.5 MHz 14.0-14.5 MHz 21.0-21.5 MHz 28.0-29.0 MHz
- **All Solid State.** High Performance Design Excellent sensitivity, selectivity and dynamic range superior to most receivers currently on the market
- [redacted] SB on 3.5 and 7.0 MHz bands USB on 14.0, 21.0 and 28.0 MHz [redacted]
- **Semibreak-in CW** is a standard feature
- **Built in** speaker and CW sidetone
- **Modular Design** provides much easier service and maintainance This is a piece of equipment that you can work on yourself if you wish because you can get at everything with ease
- **Choice of** 12-14V DC for mobile or 220-240 v AC for home operation with the Atlas PS-110 Power Supply
- **Superior Size** RX/TX-110 measures just 31W x 10H x 25D cms

WHY SETTLE FOR A SECOND HAND TRANSCEIVER WHEN YOU CAN NOW BUY A BRAND NEW ATLAS TRANSCEIVER FOR AROUND THE SAME PRICE?

ATLAS 210X Now Only $695.00

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NEW!!!

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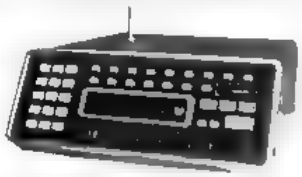
It had to come A Keyboard Entry **Microprocessor** controlled VHF/UHF Monitor Receiver from Japan with the following outstanding features



- Wider frequency range 30-54, 140-180 and 410-514 MHz
- 5 KHz Channel Spacing on VHF and UHF
- Covers 6, 2 and 0.7 meter Amateur Bands.
- Over 32,000 Channels.
- 0.5 uV Sensitivity.
- 220-240 vAC and 12-16 VDC operation
- Large Green readout, showing channel number frequency time day and date

$392 inc ST

Write for a brochure or drop in for a demonstration of this remarkable receiver

Because the **SX-100** covers such a wide frequency range, virtually any of the thousands of VHF/UHF **Commercial, Amateur** and **C.B. two-way services** in Australia can be monitored at the press of a button, e.g. **FIRE BRIGADE, POLICE, VHF MARINE OPERATIONS, CFA** and many many more

EMOTATOR ROTATORS

MODEL 103LBX Medium duty
Rotation torque 450 Kg cm
Brake torque 1500 Kg/cm **$184**

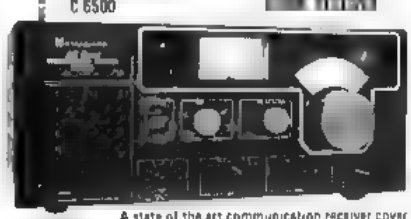
MODEL 502CXX Heavy duty
Rotation torque 600 Kg cm
Brake torque 4000 Kg/cm **$249**

MODEL 1102MXX Extra Heavy Duty
Rotation torque 800 Kg cm
Brake torque 10 000 Kg/cm **$358**

1211 Mast Clamp for 103LBX **$19**
1213 Mast Clamp for 502CXX **$31**
1215 Mast Clamp for 1102MXX **$48**

AR-22XL CDE Light Medium Duty rota for $150

STANDARD MODEL C 6500 **HF WADLEY LOOP** [redacted]



SR

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A state of the art communication receiver covering the range 0.5-30MHz using a Wadley Loop for rock solid stability. Unlike some other receivers this use only one filter in the IF and exhibit poor selectivity The C-6500 has two filters, giving good selectivity on SSB and AM. For more details write to us for a brochure

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If not now is the time to update your test gear with this popular instrument.

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Featuring a 220 MHz counter upper limit and 30 MHz generator upper limit.

Generator Frequency is read directly on the counter

A MUST FOR EVERY HAM SHACK.

Technical [redacted]
10Hz to 220MHz counter
0.4 to 30 MHz generator
600Hz tone oscillator
2mS and 200mS gating time
5 Digit LED display
Switchable KHz and MHz

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MFJ-941B New updated Tuner now has 6 Position Coax Switch more inductance as well as SWR/POWER Meter Balun and 160-10mx 300 Watt capability $139
MFJ-943 Same as 941B but less Meter Switch and Mounting Bracket $109
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MML 144/100 Watt Linear Power Amplifier

* 80 watts minimum RMS output 100 watts RMS typical
* Fully protected against poor load VSWR overheating and excessive or reverse supply rails.
* Equipped with RF VOX and manual override.
* Frequency bandwidth 144 – 148 MHz at – 0.5 dB
* 10 watts nominal for 80 watts output.

PRICE AMATEUR NETT· $265.00

100 Watt 432MHz Linear Power Amplifier

* 100 watts minimum output 10 dB minimum gain.
* Ful y protected against poor load VSWR, overheating and excessive or reverse rail.
* Equipped with RF VOX and manual override.
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* 10 watts nominal input for 100 watts output.

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UTILIZING an IF of 144MHz * 10 WATTS DRIVE of ½WATT * VOX OPERATED, TWO SELECTABLE RANGES 432 - 434/434 - 436 MHz. FEATURES EXTENDED COVERAGE FOR OSCAR 8

FEATURES High quality double-sided glass fibre printed board * Highly stable zener controlled oscillator stages * PIN diode aerial changeover relay with less than 0 2 dB through loss * extremely low noise receiver converter, typical 3 dB * Separate receive converter output gives independent receiver facility * Built-in Automatic RF VOX with override facility * Built-in 10 watt 144 MHz termination, selectable attenuator for ½ watt * Use of the latest state of the art Power Amplifier transistors provide reliable 10 watts continuous output. **MODEL MMT 432/144 'S' Price Amateur Nett. $295**

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Second Crystal Oscillator gives two ranges. Low 432 – 434 MHz – High 434 – 436 MHz programming available to either Transmit/receive both Low, both H gh, or a mixture of the two. Adjustable Drive Level is now provided by an input potentiometer. Optional RF VOX. Power Output 10 watts minimum * 28 MHz IF * Drive 1 mW to 500 mW * Aerial Changeover by PIN diode switch * Modern Microstrip Techniques * Power requirements 12 volt nominal at 150 mA 2,5 amp peak * Case size 187 x 120 x 53 cm * Spare 432 input socket.
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NEW READY-TO-OPERATE MODULES AVAILABLE IN THE SALES PROGRAM OF VHF COMMUNICATIONS.
A.. modules are enclosed n black cast aluminium cases of 13cm by 6cm by 13cm and are fitted with BNC connectors. Input and output impedance is 50 ohms. Completely professional technology, manufacture, and alignment. Extremely suitable for operation via sattelite or for normal VHF/UHF communications.

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6 METRE MOSFET CONVERTER Featuring 24 MHz local oscillator output for transverter use. Input frequency 52-54 MHz. I.F. Output frequency 20-30 MHz Typ cal ga n 30 dB Noise figure 2 5 dB Typical image rejection 65 dB Crystal Oscillator frequency 24 MHz. Power requirements 12 volt ± 25% at 35 mA **MODEL MMC52/28LO PRICE AMATEUR NETT· $49.00**
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DUAL RANGE 432 – 434 MHz & 434 – 436 MHz Converter. Type MMC 432/28 'S' & MMC 432/144 'S' Input frequency ranges 432-434 MHz (low), 434 436 Mhz (high). I.F. output frequency 28-30 Mhz or 144/146 Mhz. Typical gain 30 dB Noise figure 3 dB maximum, D.C. Power requirements 11 13.8 volts, 12 5V nominal. Current consumption 50 mA maximum **PRICE AMATEUR NETT $67.00**
1296 MHz CONVERTER, Mircostripline, Schottky diode mixer IF 28- 30 Mhz or 144 146 MHz. Noise figure typ 8 5 dB Overall gain 25dB. Power requirements 12 volts DC ± 25% at 50 mA. **PRICE AMATEUR NETT. $65.00**
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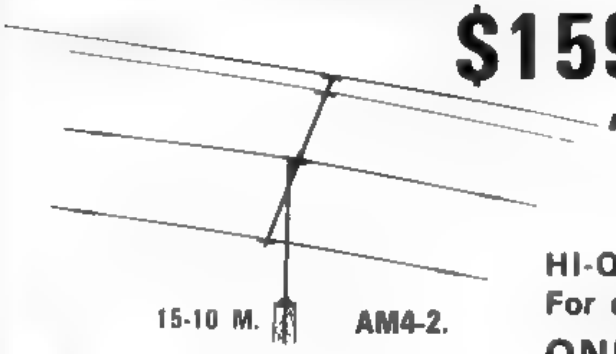

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For dipole or beam.
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CHIRNSIDE ELECTRONICS are now Victorian distributor for SKYBAND Mobile Antennas.

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SKY 80	6 feet long	3.5 MHz $28
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SKY 20	6 feet long	14 150 $26
SKY 15	6 feet long	21 .00 $25
SKY 10	6 feet long	28 500 $24

EMOTATOR ROTATORS

201AXX. New Model	$175
103LBX Medium Duty	$169.
502CXX. Heavy Duty	$249
1102MXX Extra Heavy Duty	$389.
1103MXX. Extra Extra Heavy Duty	$395.
502 Mast Clamp	$32.
103 Mast Clamp	$22.
VCTFX-7 7 Core Cable per Metre	$1 20
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Wide Range of Coax Cable and Connectors in stock.	
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ICOM

IC-701. HF 160-10M Transceiver	$1299.
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2 80-10M. Traps for dipole. **$50.**
Complete with balun and insulator.

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YG-3395C CW filter for 520	$59
YG-88C CW filter for 820	$59
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HK-708	$21.
HK-707	$23.
HK-706	$25.
HK-710	$49.

YAESU

RSL base mast inc. 2 M.	$29
80 M.Resonator	$22
40 M Resonator	$21
20 M.Resonator	$20
15 M.Resonator	$20
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OPTIONAL. FAN	$39
OPTIONAL. DC-DC for 101Z	$79
FT-7	$389
FT-901DM Transceiver	$1549
FV-901 Ext.VFO FT-901.FT-101Z.	$439
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YO-901 Panoramic adapter, monitor scope	$499
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SP-901 Ext. speaker for 901-101Z	$53
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FT-7B 80-10 M.Transceiver 100W	$639
YC-7B Digital display for FT-7B	$123
YE-7A Hand Mic for FT-101Z	$21
YD-148 Desk Mic for all Yaesu	$49
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FL-110 Solid state amp. 160-10 M.	$239
FL-2100B 1200 W Amp	$585
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YC-500 Freq. counter	$POA
FT-227R 2M Digital transceiver	$329
FT-227RA 2M. Scanning digital transceiver.	$399
FF-501DX Low pass filter 2 kW	$40
YO-101 Monitor scope for FT-101E	$379
YC-601B Digital display.Freq counter FT-101E	$279
FT 101E 160-10 M. Transceiver AC only	$745
Optional X-tall filters FT-901.FT-101Z	$69

equipment sold by Chirnside Electronics is pre-sales checked and covered by 90 day warranty and expert after sales service.

All prices include Sales Tax. Freight and Insurance extra.
Prices and specifications are subject to change without notice.

We handle and stock most Yaesu. Kenwood. Icom. Equipment.

CHIRNSIDE ELECTRONICS. 26 Edwards Road,Lilydale,3140. phone (03) 726 7353.

THE INTRUDER WATCH IN REGION 2

Alf Chandler VK3LC
Federal IW Co-ordinator

At the January meeting in Miami this year the ARRL adopted a resolution, the text of which I quote hereunder —

On a motion they "unanimously VOTED that the Board of Directors commends the performance and contributions of those amateurs who are actively participating in the Intruder Watch programme and instructs the Genera Manager to give maximum support to this important activity, part cularly during the remaining year to the World Adm nistrative Radio Confer ence'.

They go on to say — "During the past year, 1978, the FCC Treaty Branch was sent numerous reports concentrating upon the all-too-familiar 40 metre foreign broadcast interference into exclusive amateur frequencies. The voluminous reports served as the basis for the reports sent to Washington, and we appreciate all that you have provided us. Please keep things going at your present level of activity as your continued reports will be of great assistance with regard to the ARRL efforts on behalf of amateur radio at the WARC sessions later this year in Geneva."

This applies equally here in Australia too.

It is becoming common knowledge that the Peoples Republic of China is contemplating legalising amateur radio, and it is therefore hoped that after WARC those annoying broadcasts may be minimised, especially if they interfere with their own amateurs!

I am appealing for somebody to take over the Federal Co-ordinator position

Ivor VK3XB has all he can handle with the VK3 co-ordination, and with my change of QTH and mounting comm tments I have all that I can handle with Region 3.

Will somebody come forth?

It does not necessarily mean a VK3. Anybody with some enthusiasm can do the job successfully.

How about it?

My new QTHR is — 15 Point Avenue, Beaumaris 3193. ■

QSP

CALL SIGNS WITH ADDRESSES

A number of members wrote their call signs on the subscr ption notices when they sent them in w th payment. Most of these were already on record but some were not and the membership records were duly amended — thank you.

A few asked why the r call signs could not have been included w th the computer name and address as printed on the subscription notice. The subscript on notice is a once a year document but the AR address labels are used once each month. The cal l sign or SWL number is on the AR address label as an add tiona line wh ch also includes membersh p deta ls in the form of grade. Division, pro rata (not used yet — all are 00), mai l distributo rata (not used yet — all are OO), mail distribution code, zone (not yet in use), call s gn.

The subscr ption notices, however, have to fit into standard commercial w ndow-faced envelopes of post office preferred s ze The notices were preprinted in bulk to take advantage of better price for bulk The address data on the notice has to show through the window face but there must be some lat tude otherwise problems arise in inserting the notice into the envelope and also latitude in trimming the not ces to size must be allowed for

If you take these factors into account you will observe that there is on y suffic ent space for three lines of print, hence the different address ng format for the AR address label where four lines can be used and sti l rema n within the computer page formatt ng suitable for Cheshire machine labelling of AR abe s. The call sign cannot be included after the surname on the subscr ption notices because of a lim tation in the number of characters available to cope w th long names such as apply to clubs, etc , and the need for the post code to stand out c early

Yes, the printer left no margin for error when pr nt ng the subscript on notice name and address pane n re ation to the right and left hand margins used for the pr nting on the notice This introduced a tr mm ng problem where a computer letter or two on the eft side of the name and address became h dden out of view from the window face The proof reading copy of the notice was fine but there were errors which required correction and the pr nter compensated by taking the print lines too far to the right. The fun and games we do have!! ■

AMATEURS vs. HAMS

Amateur radio is in a sense like the art of fishing. Anyone with a triple set of hooks, a 15 pound test line and a rod the weight of a telephone pole can eventually land his fish. The chap with the light tackle is up against it, but he gets more out of the game when he does catch one. A station running comparatively low power will never make the lists of high scoring stations in one of those RST races of course. And it is not likely that some amateurs, now we have the gear available to run legal limits and above, will ever again go back to luck and skill which are the alternatives to brute power — even if the multipliers or other condition do favour turning the gain down. Those of us with moderate output should make our weight felt just by getting on and into whatever action is taking place as well as accepting the fact that we will not win any prizes, but letting others know that with our handful of watts we are in there batting — not for a silver-plated medal but for the very perverse fun of making contacts.

The oft-used expression "this is what separates the men from the boys" should be turned around to read "what separates the radio amateur from the ham is the ability to talk"

From Westlakes RC Newsletter, February 1979. ■

MAGPUBS

WIA Car Stickers now available:

Send only 20 cents each — GET ONE NOW. Send only self-addressed stamped envelope with 20 cent stamp —

Direct to your Division or from Box 150, Toorak, Vic. 3142.

New rates for 1979 subscriptions:—

VHF Communications by —	
Surface mail	$8.20
Air Mail	$12.40
Single issues, when available from Magpubs for 1978/79, will be each	$2.10

MAGPUBS A WIA Membership Service, Box 150, Toorak, Vic. 3142.

GEELONG RADIO AND ELECTRONICS SOCIETY

The Geelong Radio and Electronics Society enjoyed a good partic pation of many new members during the recent J. Moy e Memorial Field Day.

The venue was at the Scout Camp, Eumeralla, near Angleses

Regular meet ngs are held at the Society's rooms on the Belmont Common.

Visitors are welcome. Mail enquiries may be directed to the Secretary GRES, PO Box 982, Geelong, or ring Geelong 21 3858 for further information. ■

Reg VK3NOF with the TS120V on CW for VK3ANR

TRADE HAMADS

For a very long time commercial advertising has not been accepted in AR Hamads, but as the result of discussions at the 1978 Federal Convention a decision was made to open up a "Hamads-Trade" section. The rate will be $10 for 4 lines plus $2 per line (or part thereof), minimum charge $10, prepayable. Copy is required by the first day of the month preceding publication. This will mean that in future ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes. ■

MEET THE "THUGS"

The "Thugs" is a name adopted by members of the VK3 Division Thursday Group Socialisers. They meet from approximately 12 noon to 2 p.m. each Thursday for luncheon in one of the local hotels near the VK3 rooms.

Attendance varies from six to 20 at times, and includes some YLs and XYLs.

Come and join the "Thugs" for a bit of socialising if you are a WIA member and travelling near the area on Thursdays.

Photos courtesy Mike O'Burtill VK3WW, 3 Maxwell Street, Lalor, Victoria, and to whom enquiries re the "Thugs" may be directed. ■

PHOTO No. 1

PHOTO No. 2

PHOTO No. 3

PHOTO 1. L. to r. — **Maurice VK3AIG, John VK3ZAZ, Doug VK3ZOO, Fred VK3YNC — whose shout next?**

PHOTO 2. **"If you missed the floor show, just wait until you see the waitress", seems to be the Div. President, Eric VK3ZZN's thoughts.**

PHOTO 3. **Derek VK3ZVG, Div. Treasurer, "This is what I call general business."**

AOCP EXAM — FEBRUARY 1979

POSTAL AND TELECOMMUNICATIONS DEPARTMENT

AMATEUR OPERATOR'S CERTIFICATE OF PROFICIENCY

SECTION M (Theory), BOOK 2
February 1979

(Time allowed — 2½ hours)

NOTE: SEVEN questions only to be attempted. Credit will not be given for more than SEVEN answers. All questions carry equal marks.

1 (a) With the aid of a circuit diagram, explain one method of producing single sideband suppressed carrier signals.
(b) Discuss the importance of carrier frequency stability in this type of transmission.

2 (a) Assisted by diagrams explain the theory of operation of a silicon-controlled-rectifier (SCR).
(b) Explain why interference to radio reception may be caused by equipment which employs SCR devices and suggest a method of reducing this type of interference.

3. (a) Describe with the aid of a diagram the operation of a reactance-modulator used to frequency modulate a transmitter.
(b) Does the power output of an FM transmitter vary with modulation?
(c) Is linear amplification necessary in the power amplifier stages of an FM transmitter?

4. (a) What is meant by the term "Dielectric Constant" in relation to a capacitor?
(b) Three capacitors of 2, 3 and 6 microfarads respectively are connected in series. Calculate the total capacitance of the group.
(c) Discuss briefly the losses which may occur in a capacitor.

5. (a) The tank circuit of an RF amplifier is tuned to resonate at 7 MHz. State, giving reasons, whether the plates of the variable capacitor have to be rotated in or out of mesh to retune the circuit to resonance at 7.1 MHz if the value of inductance is held constant.
(b) Explain why and how the anode current of a Class C radio frequency amplifier varies as the tank circuit is brought into resonance.
(c) State, giving reasons, whether the anode current of a PA stage will vary when the antenna coupling is reduced.

6. (a) Explain briefly the theory of radio transmission via the ionosphere.
(b) Discuss the effects on high frequency transmissions of the daily variations in the ionosphere, the seasonal changes and the sunspot cycle.

7. Sketch and describe the constructional details of a permanent magnet moving coil type meter. Explain the theory of operation and show how the meter could be adopted to measure alternating currents.

8. (a) Describe, with the aid of a sketch, the operation of a type of microphone suitable for use at an amateur station.
(b) Draw a circuit diagram of a pre-amplifier suitable for use with a high-impedance microphone.

9. A power amplifier stage of a transmitter operates with a grid current of 15 milliamperes through a 2000 ohms resistance to earth. The total cathode current is 115 milliamperes and the total operating bias is 80 volts. What is the value of the cathode resistor? ■

LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

34 Taotangi Road,
Alphington, Vic 3078.
8th March, 1979.

The Editor
Dear Sir,
Thank you for the letter of 5th March informing me that I received the Technical Award for 1978.

I have pleasure in donating the amount involved towards the expenses of WARC 1979 and enclose a cheque for 25 dollars.

All best wishes,

Your sincerely,
Roy Hartkopf VK3AOH. ■

1621 South Lakeshore Drive,
Chapel Hill North Carolina, USA.
March 8, 1979

The Editor,
Dear Sir,
Your February editorial covered the need for concise and non-ambiguous Amateur Service regulations but that is only a small part of the "over-regulated" situation we Australian amateurs are in. How about the outmoded regulation which prevents us using ASCII code for TTY transmission and transfer of microprocessor programs? Or the continuance of regulations preventing phone patch or third party traffic? It's significant that the latter regulations only exist in countries with governmental monopoly common carriers such as the former PMG. These carriers have an obsession in seeing that patch or third party "privileges" are not granted to amateurs in case they lose some business (in Canada and the US where patch and third party are allowed, studies have shown that no business has been lost).

In the PMG days, we had the unhealthy situation where they were both the regulators and the main benefactors of the regulations and in that environment it was virtually impossible to get equitable regulations. Now that a separate organisation, the P. and T. Department, is the regulator and supposedly has the interests of the whole community at heart, they will, hopefully, not continue these stifling regulations which only serve to suppress the growth of the amateur service.

(ASCII is permitted in VK.—Ed.) ■

Leo Powning VK5ALP/W4.

5th March, 1979.

The Editor
Dear Sir
would like to thank VK3AMK for his suggestions and corrections to the VK/ZL Contest 1978. Jock White of the NZART compiled those rules and this year it's my turn. We try to give the entrants the kind of contest they want and any suggestions we receive are most welcome. Now to some observations. 24 hours versus 48. Most operator's comments show a preference for 24 hours of operation. However I have included an 8 hour section this year to test for support.

Why start at any other number than 001? Jock changed it, I do not know why. Australian produced rules always start at 001. Enough said. With the inclusion now of prefixes for scoring the serial tells the listener very little as to how the other station is scoring.

For log checking, I am interested in the fact that a valid contact took place and was recorded for contest purposes and regulations. It could have been 5/7 ABC, 5/90000 or just 5/9. It makes little difference, so long as it was recorded by both operators correctly. The check of the contact is easily carried out by use of GMT in the log, without the aid of a cypher. I agree we do not want this contest to turn into a message handling exercise. As to the GCR suggestion, this has been considered now for years. But what do you do when up to 50 per cent of the logs have to be re-scored BY THE CONTEST MANAGER, or simply reject them?

The prefix rule will be looked at, with JK1AA/5 being considered as JA5, for scoring purposes. JA5 is the most common prefix in the "5" call area. But please keep in mind most rules need altering sooner or later.

I do not see the necessity for writing out a log three times, or even twice. A carbon copy for the station log and the original sent away to the contest manager is all that is required.

A contest manager's desire to receive logs (this manager anyway) mostly overrides the log being presented, as a model of neatness, beautifully presented, or on special paper. Just so long as I can read what is written and the format follows the rules, that's it. After you have received 400 to 500 overseas logs for checking in a contest, that are written in every conceivable way, on paper that ranges from high quality parchment to the cheapest flimsiest imaginable, in languages from Russian to Spanish, you become very adept at reading logs written in English (Australian) and its various forms.

I realise this may be a pill for some operators to take, preferring to enter a well presented log, but the fact remains you do not score any points for that. But I like to receive them.

It has been our intentions (NZART and WIA) to encourage participation in any possible way. Your suggestions are desired. This year the WIA is offering medals and medallions as well as certificates and trust this will give some operators the incentive.

Will any Club, Division or Group offer a trophy for the contest?

I'll leave you with a question, to which please write me your answers — Should we have contests?

Neil Penfold VK6NE,
WIA Contest Manager for VK/ZL Contest. ■

35 Rutland Street,
Coorparoo 4151, Queensland

The Editor,
Dear Sir,
PHONE PATCHING!!
I am writing to invite your assistance in possibly obtaining information from Mr Geoff Swift VK2NCJ/YGE, whose address is not known to me.

In describing his radio room and integrated units of equipment he mentions "a phone patch board".

I wonder if he would favour readers of AR with more information on this interesting device, i.e. is it home constructed? Is it permanently connected to his telephone and how does it work? How does he use it? If it is a commercial unit, from whom can these be purchased?

I am aware that phone patch units are readily available in Australia in manufactured form. The Yaesu Musen SP901P Phone Patch/Speaker is a typical example, but this is the first mention of a "phone patch board" as Geoff puts it.

They are, of course, widely used in the USA and Canada. In fact, I seem to have noted some references to inbuilt phone patch facilities as normal provision in some amateur transceivers.

I have on one occasion, during a visit to Canada, spoken from my motel room to a G3 in the UK — via the station of an amateur equipped with a phone patch unit, and it functioned perfectly.

It is interesting to reflect that, given the phone number of an American amateur, I could, via International STD, call him and be patched back to VK on say 14 MHz, and have a QSO with a nearby amateur in my suburb!! The possibilities are innumerable. Has anyone tried this sort of working?

G Harmer VK4XW.

Editor's Note: The use of phone patch equipment in Australia is illegal under current P and T regulations (VK3UV). ■

The Editor,
Dear Sir,
I would like to add my voice to those of VK2YA and VK3?? (AR February 1979) in criticizing your article about the "Wooley Bum" club and add some further comments.

This kind of occurrence is the direct result of the lowering of the standard of the novice examination.

The last two novice theory exams have, in my opinion, been far too easy. And yet there is now talk of dropping the Morse requirement.

There has been some mention in AR recently of a lowering of standards of on-air operation, and yet there are those who want to further simplify the entrance requirements to Amateur Radio. It is this simplification which has allowed such elements as the Wooley Bum group to infiltrate the ranks of the Amateur Service. Fortunately at present they form a small minority.

However if this trend is allowed to continue, their numbers will increase. The overall standards within the Amateur Service will fall, and those who oppose our allocation of frequencies will have more ammunition to use against us.

I strongly urge the WIA to press for the maintenance of a reasonable standard in all examinations for Amateur licences.

(Name and address supplied) ■

10 David Street East
Springwood 2777
1st March, 1979

The Editor,
Dear Sir,
I notice on page 57 of "QST", October 1978, that the Canadian administration is working on an entirely new Amateur Radio Syllabus for its examinations which are held FOUR times a year — while our Australian authorities can only "run" to half that number.

I note, too, that the Canadians propose "replacing the multiple-choice questions on theory with straight problem-type questions". It is pleasing to see that not everyone is thoroughly bemused by the multiple-choice format, which is, in fact, only one of a number of "easy marking quick answering" types. It is hoped that the P and T Department does NOT incorporate into its Novice and AOCP Syllabuses a rigid prescription that permits only the multiple-choice type to be used. That would mean a DEAD HAND approach to Amateur Radio examining for the next 50 years! It is hoped that the wording of any revised Regulations on "Examinations" will be flexible enough to permit the Departmental Examiners to offer a more flexible approach to testing of candidates. However, after over 50 years of testing AOCP candidates WITHOUT A GUIDELINE IN THE FORM OF AN AOCP SYLLABUS one cannot be too optimistic. So far it seems that P and T knows only two question formats — multiple-choice and essay types. While in no way decrying their technical competence in Radio and Electronics, one wonders what specific training and qualifications they possess in the equally important areas of education, instruction and examining.

Yours faithfully

Rex Black VK2YA. ■

F3/59 Milton Avenue,
Henley Beach, SA 5022.

The Editor,
Dear Sir,
I am writing this letter to inform you of the views I have formulated since joining the amateur ranks some eight months ago.

1. Nobody condescends to use AM any longer, which for a "shoestringer" like myself is particularly infuriating. I don't have either the test equipment or money to assemble a flashy full-blown SSB rig. I have heard that if I attempted to use DSB I would get the same silence.

2. I came into the amateur scene naively believing that most amateurs' major items of equipment were home-built, and that older amateurs would have been the most active builders. That belief was quickly broken by the overwhelming weight of evidence to the contrary. In particular I remember talking to a grey-haired old gentleman at a WIA meeting some months ago. When asked whether he knew of any amateurs that used AM he said he didn't know of any in SA, but there was an AM net in Victoria on 80m. He then espoused the virtues of his latest purchase — an FT901! Given that sort of "encouragement", it is little wonder that I am a rabid anti-commercialist!

3. The use of net frequencies and channel numbers. If you are using crystal controlled operation as I am, you need two crystals — one for the net frequency and one for another frequency to conduct your QSO. If you use just the one crystal not on the net frequency, your CQs are just a cry in the wilderness.

In short, net frequencies have discouraged people from looking across the bands to hear what is available, and it is "tough" if the crystal you obtained from the disposals store isn't near the net frequency.

My opinion of channel numbers are that they are great provided you have got a shop-bought rig that displays them! I mean, why bother with actual transmitted frequency, it is such a technical old thing anyway! If you happen to have a chart depicting how this channel system works, fine, if not, you become as hopelessly lost as I am when trying to figure out what frequency Channel 6 2m FM repeater represent.

4. Use of high power linear (or otherwise) RF amplifiers. Like the Kenwood TL-922 2kW PEP and the Dentron Radio MLA2500, 1 kW DC Input on CW. As the Institute knows these power levels are illegal for the ARS and yet these amplifiers are used, sold and advertised as if they are a normal item in many amateur shacks. If the ARS is to have any integrity in view of the public, of commercial operators and of the P and T Department, this practice must stop.

5. The advertisement of "illegal" equipment. Both of the amplifiers mentioned in (4) are advertised in the WIA journal AR (i.e. Vol. 46, No. 10, October 1978). The Institute cannot cry ignorance of this type of equipment being advertised in AR, for in the same issue there was a front page announcement apologising for a mix up in prices between the Dentron MLA2500 and some other item in an Emona Electronics advertisement.

Now could stretch my credulity to believe that the busy staff of a monthly magazine simply don't have time to check every advertisement for the offering of illegal equipment — but not after that lot! For that statement to have been made, someone would have had to look up that advertisement to confirm that the prices were in fact wrong. Also that person would have had to realise the intrinsic value of the 1 kW amplifier in order to end the apology statement with ". . . must have thought that Father Christmas really did exist." In any case these adverts have appeared in the three issues of AR I have at hand. To suppose that the staff of AR have not perused these issues after publication and further that they have not noticed the advertising, especially in Emona Electronics' case, of illegal equipment is ludicrous!

The WIA is the representative body of Australian amateurs who are a group of people interested in observing the Wireless Telegraphy Act as pertaining to the ARS. As such the WIA has the responsibility of behaving like an 'ideal' amateur with regard to regulations. Further, it has the responsibility to ensure that such regulations are observed, or at least encouraged by amateurs through the medium of AR and other avenues.

If the WIA neglects this responsibility by allowing repeated advertisements of unlicensable equipment, it can't expect any respect from either the Australian amateur the P and T Department and, most importantly, WARC 79. If it's just a matter of commercial pressure, then increase the price of AR by $0.50 or $1.00 and tell these firms that persist in displaying unlicensable equipment what to do with their adverts. I am sure any reasonable amateur would support this move.

6. The sham of today's ARS. The intrusion of commercialism into amateur radio activities is so deeply entrenched and widespread, that "amateur" and 'commercial' equipment is almost synonymous. Also there are now firms that cater on a regular basis to the repair of most types of commercial amateur equipment. Further, to claim that the technical level obtained in the passing of the AOCP exam is such that the widespread repair of this highly sophisticated equipment is possible by amateurs without professional servicemen is just plain polite and utter hypocrisy.

As I see it, the quandary can be put thus: How on earth can anybody claim to be an amateur when their major items of equipment are designed and built by professional companies. When their equipment has a major fault it is repaired by professional repairmen and when their QSOs are more of a social than technical nature. The answer is, of course, they can't and it's about time the ARS and in particular the WIA started openly declaring this! Failure to do this honestly will only lower our esteem in everybody's eyes.

7. The only ways that would ensure the continuance of the ARS under these conditions is to declare:—

(a) That we are a viable on-going commercial concern that stimulates economic growth, generates employment in the order of tens of thousands and generates cash flow in the order of millions of dollars world-wide. Also, due to the competition between major producers of amateur and other communications equipment, the ARS, together with similar services, generates technological advancement of communications at a pace that would have been otherwise impossible.

(b) With an investment of between $500 to $2000 by most amateurs in their own commercial equipment, they're not fool enough to submissively accede to any demands that some amateur bands be given over to commercial interests. After all, we're just as much a commercial concern as these other interests, and as with other vociferous groups in society, we have just as much right to have our collective demands listened to and acted upon favourably. If nothing else, amateurs are a group of people on this earth that have a right, along with other groups, to a fair share of this earth's resources and that includes the electro-magnetic frequency spectrum.

(c) The amateur radio service is a group of people where you can either be the instigator of, or participant in, the subject being discussed. No other mass communications medium has this ability of complete flexibility and immediate feedback of information. In any QSO, a statement can be made, questions asked, answers given on any subject that ranges from local neighbourhood events to the feelings of average people on recent happenings in their distant countries. From short hop "gather-rounds" to world shrinking DX technical discussions, amateur radio fills the bill in the most cost effective and enjoyable manner we presently have available for the financially funds limited person.

8. Finally, and I'm sure you've read similar proposals, if only half of the above is true then some way must be found to allow all responsible people to a fair share of the electro-magnetic spectrum. The best way to do this is to allow these people to become part of the ARS by the passing of a simple operating techniques exam. This exam would test their ability to correctly operate a commercial amateur rig, or several rigs, representative of the range of operating techniques required. Also it would test their ability to correctly set up and tune a number of commercial antennas. Finally it would also test their knowledge of regulations as pertaining to the ARS.

Yours,

G. L. Moore VK5AGL,
F3/59 Milton Grove,
Henley Beach, SA 5022

P.S. I have included $2.50 for WARC 79, you're going to need it!!

EDITOR'S NOTE

Our readers would have to agree that this is an unusually long letter for AR to publish, but I have allowed its publication without any alteration, as we have always believed in the freedom of speech and this column is a forum to air your views. Perhaps our correspondent has a message in his letter from which we all might learn from. I trust that some of his frustrations have now worn off.

Publication of these long letters is not to be taken as a precedent.

Acknowledgement: Many thanks for the $2.50 donation to the WARC fund — we do need it — and much more!! (VK3UV.) ■

TECHNICAL CORRESPONDENCE

6 Torring Road
East Hawthorn, Vic
26/2/79

The Editor,

Dear Sir,

Dr Dayal Abeyasekere's letter, published in February 1979 AR, has proven most useful and informative in further work on the system described in my article "Optical Communication for the Amateur" (AR January 1979).

However, I feel that Dr Abeyasekera has not recognised several important practical considerations applying to the amateur constructor, which we considered carefully prior to publication.

Specifically, I would take issue with Dr Abeyasekera's statement that the solid state systems used for optical communication possess "better signal-to-noise ratio than the vacuum tube systems described." That statement may prove to be very difficult to substantiate.

It will be noted from Figure 13 of my article that the mercury lamp modulator is a simple, relatively high current class A amplifier. That it is a vacuum tube amplifier is irrelevant. Any suitably rated power transistor could have been used in an appropriate circuit to perform the same duty. This amplifier used valves since all of the parts could be salvaged from an old TV set, with the exception of the output valves, which are readily available from disposal sources. Many amateurs would have these components on hand.

A number of solid-state optical communication systems were tried by the author and fellow experimenters between 1968 and 1976, using such varied equipment as LEDs, electro-luminescent panels, photo-conductive detectors, photo-transistors and photo-diodes. All of these were abandoned when we achieved vastly improved signal-to-noise performance over practical distances with the mercury arc/photo-multiplier combination. It is significant that the only other published experiments over similar test distances to ours in Australia (Burkinson, Aust. EEB, December 1972) employed a similar system.

The insuperable problem lay in finding an LED of comparable price to a mercury arc, giving a similarly intense light output. 100 watt mercury lamps are readily obtainable from any electrical wholesaler for about $8. I could not say the same for the availability or the price of high output LEDs.

As Dr Abeyasekera has found with LED-based systems, and I quote from his letter, "The test link . . . at its best so far had a 40 dB S/N ratio for a 10 kHz bandwidth over the length of a 50 foot corridor."

Pioneer experimenters Bell and Tainter using nothing more than vibrating mirrors and selenium cells with reflected sunlight, spanned 700 feet in free air and full daylight. That was in 1881. Refer "The Photophone" by W. Ackroyd (1883).

With the mercury arc system I described, John Eggington VK3ZGJ and the author maintained a 2-mile optical link between December 1975 and May 1976. It was a 2-way link, with 30 to 40 dB S/N in one direction and 20 to 30 dB S/N in the other direction, owing to smaller aperture optics in the return link. These noise figures were maintained on the vast majority of nights, which were relatively clear. During heavy rain, this would fall to about 5 to 10 dB S/N, and the only time that the system broke down completely was in very heavy fog just before dawn on a very cold morning. A usable signal could be transmitted whenever the transmitting site was visible at the receiving site. The S/N figures I quote were with the full 10 to 15 kHz bandwidth of which the system was capable.

Though this level of reliability may as Dr Abeyasekera has pointed out, make it unsuitable for commercial use, amateurs do not necessarily require a service giving a very high percentage of usage time. Such is the case with Ionospheric propagation on HF. Commercial services are steadily moving up to satellite communication, yet the amateurs are still perfectly happy to use HF bands, even if they open up for only a small percentage of the day.

The working model of the system is still operable. I would invite and would welcome the opportunity of making a series of further S/N tests on the equipment, plotting this against such parameters as humidity, temperature and wind. All that I need is the assistance of an interested party with access to a car.

Dr Abeyasekere states that, 'Assuming that a S/N ratio of 20 dB is acceptable . . and that input S/N seldom exceeds 50 dB, it is evident that 30 to 40 dB of signal degradation with respect to noise is all that can be tolerated". That seems quite reasonable. However, Dr Abeyasekere continues, "A light drizzle or moderate fog is all that is needed to introduce over 100 dB of attenuation over distances as short as 100 metres". From my own experimental work, I would assume that this is an extreme figure. However, to continue, " it is only when there are very clear atmospheric conditions that less than 30 to 40 dB signal degradation with respect to noise can be achieved". Here, I must disagree. Firstly, signal attenuation is not the same as received signal-to-noise ratio. In radio communication, signals may be transmitted with 50 dB S/N and can be attenuated by many hundreds of dB before reaching the receiving antenna. Provided that the noise figure of the receiver is low, and the transmitted signal is significantly more powerful than external noise, received signal-to-noise ratio could still be up near 50 dB. Secondly, Dr. Abeyasekere's analysis takes no account of the transmitters' power with respect to ambient noise, which is probably the most important single consideration in any communication system's ability to convey intelligence.

Admittedly, the LED systems are an elegant solution to the problem. They have extremely fast response times, while the mercury arc is limited by its ionisation time to an upper modulated frequency limit of about 20 kHz for full modulation. But this is no disadvantage for a single-channel voice system.

And LEDs do have very low power consumption. But even Dr. Abeyasekere admits that ". . . the total light output and beam energy flux density (of the LED systems) are less than 1 per cent of those from common . . hand-held torch lights". With such low power, it is little wonder that Dr Abeyasekere has noticed that the signal drops below ambient light levels very quickly as transmission distances increase. The "brute force" method of using an arc lamp presents, for our purposes, a rougher less efficient but infinitely more practical solution.

As to costs, a series of priorities must be established. Despite their high cost, we decided to employ photo-multipliers as the detection device in our proposed system. They have an intrinsic freedom from thermal noise at room temperature with respect to semi-conductor light detectors, owing to their low infra-red sensitivity, photoemissive nature and high post-detection gain. An analysis of this is described at length in the book 'Laser Receivers' by Monte Ross, listed at the end of my January article. In any case, we obtained these PM tubes very cheaply on a number of occasions from disposal sources. Should these prove hard to obtain, SSTV clubs or commercial television stations could be approached for old PM tubes which have been used in telecine chains and have fallen below broadcast specifications. This tactic proved to be rewarding on a number of occasions.

The SLR lenses used by Dr Abeyasekere are not ideal for optical communication work, being unnecessarily high in optical quality, and insufficiently large in aperture. The 5-inch double convex lenses sold by Coles & Garrard for $5 would have been a better choice. I feel. For a reflector behind the arc, we used a 12 in. traffic light reflector, sold quite cheaply by Eagle Signals.

There are a number of other reasons which I could give for the excellent results obtained with the mercury arc system which I won't elaborate on here, owing to space.

To conclude, Dr Abeyasekere states that " telecommunications authorities are not likely to prevent amateurs and others from conducting research into optical communication". There has already been a conviction against a business organisation in Melbourne which continued to use an IR link between two city buildings after repeated requests by the P and T Department to cease operations.

In view of this conviction, intending experimenters should approach the licensing authorities for the requisite permit before making their results public.

Yours faithfully,

Chris Long. ■

MAGAZINE INDEX

Syd Clark, VK3ASC

BREAK-IN October 1978

The Amateur's Code, Digital Control Interface, A Pre-selector and Adjustable S Meter for HF Transceivers; TVI; Basic Antenna Facts; The Good Companion CW Monitor; Solid State Version of the LM and BC221 Frequency Meters, Trans-Tasman Commemorative Flight, 1928-1978; Whither Communications.

•

BREAK-IN November 1978

The "Galbraith" Power Supply; A Battery Charger for Penlite Ni-Cad Batteris, Galbraith RF1 VHF Pre-amplifier; Taming the Regenerative Detector; Mobile in the Late 70s, The Royal Air Force Amateur Radio Society; 50th Anniversary of the Tasman Crossing.

CQ November 1978

Amateur Radio Serves the News Media — A Safari with the President, Constructing Simple High Current Power Supplies, A Multitester for RF, The Radio Amateur's Nasty Weather Primer, CW WW DX Contest All-Time Records, Phone, CW and USA, The Heathkit Model IM-4190 Bi-Directional RF Wattmeter Kit; A Two Metre Transmitter for AM; The SW-6 — A Pioneer Amateur Receiver; A Cheap and Easy Memory Keyer, Wire All-Band Antennas, Solid State Vacuum Tube Equivalents; Temperature Control of Electronic Circuitry; Amateur Radio Station Grounding, Pt. 3.

HAM RADIO August 1978

10-GHz Transceiver; Frequency-Lock Loop; Locating TVI Caused by Metallic Rectification; Seven Element Forty Metre Quad; High Resolution Frequency Synthesizer; Automatic Noise-Figure Measurements, Electronic RTTY Keyboard, Improved Grounding for the 1296 MHz Microstrip Filter; Simple Monitor for Accurate Reports on Two-Metre FM; Single Code Decoders, Electronic Bias Switching for the Henry 2K4 and 3K4.

HAM RADIO October 1978

High-Frequency Communications Receivers; Low-Noise 432 MHz Pre-amplifier; Tracking Calculations for Superhet Receivers; CW Signal Processor; Low-Noise 30 MHz Pre-amp, 1296 Local Oscillator Sidebands, Synthesized High-Frequency Local Oscillator System, Reciprocating Detector, RTTY Demodulator, High-Sensitivity Pre-amp for Frequency Counters, Twin Diode Microwave Mixer; Two-Metre Pre-amplifier.

QST September 1978

Meet the Remarkable but Little Known Vacker VFO; Designing a Vertical Antenna; Prescaler Updates the DVM/Frequency Counter; An Auditory Dip Oscillator, A Solid-State Transverter for 70 cm; An Inexpensive Capacitance Meter; Direction Finding - European Style; JG1DFW, First Solo Explorer to Reach the North Pole; Operation Outreach; Ask Not What Amateur Radio Can Do for You, DXCC Honour Roll, Results, First Annual ARRL EME Competition, Dawn of an Era; WARC 79; Moved and Seconded, Amateurs Lose on Reconsideration of 10 Metre Amplifier Ban; We Are Not Alone.

QST October 1978

A Newly Discovered Mode of VHF Propagation, The Canadian Wonder; A 25 kHz Calibrator for the HW-8, Build This High Performance Top-Band Converter, SSTV Pictures from Your Microcomputer; Medium Scan Television — A New Frontier, Build This Sardine Sender, You and Your Log, How Safe Is Your Ham Shack?, A Different Kind of Courage, Sweepstakes for the Little Guy, Try a Hamfest Code Contest, They Made It — W50PC/Double Eagle II, QST Abbreviations, Straight Key Night, 45th ARRL November Sweepstakes Announcement. Results, 1978 ARRL International DX Competition Double-Digit Damage, Hams Five by Nine with WARC Comments, ASCII at Last, Now There's Something You Can Do.

QST December 1978

A 20 Metre VXO Controlled 6 Watt Transmitter; A Baseband Communication System, pt. 2; Some Experiments with High Frequency Ladder Crystal Filters, What Next After Moonbounce? Venus Bounce!, An Inexpensive Multi-band VHF Antenna. The Club Filler, Give Your Repeater Some Identity, The Aerial Performers of the Radio Circuits, The Contester, The Easy Way to OSCAR 8 Mode J Pt. 1, Three Feet of Rain; Simulated Emergency Test Announcement, Rules 32nd VHF Sweepstakes. Hertz not Parts . . . A Sine of the Times. Results First ARRL UHF Contest, 1978 September VHF QSO Party WARC 79, Region 2 Amateurs Review WARC Progress, Amateurs Have Their Say on the Communications Act of 1978; FCC Prohibits Autopatch on Automatically Controlled Repeaters, Africa, Asia and Amateur Radio.

WIA EDUCATION

Graeme Scott VK3ZR
Federal Education Co-ordinator

Here is a bibliography of texts, etc., which are suitable for use by amateurs and intending amateurs.

RSGB PUBLICATIONS

Technical books:
Amateur Radio Techniques.
Guide to Amateur Radio.
Morse Code for the Radio Amateur
RSGB Amateur Radio Call Book.
Radio Amateurs Examination Manual
Radio Amateurs' Examination Revision Notes.
Radio Communication Handbook
Radio Data Reference Book.
SSB Equipment.
Service Valve and Semiconductor Equivalents.
TVI Manual
VHF/UHF Manual (2nd ed.)
World at their Fingertips (Paperback) (De-Luxe)

Maps and charts:
Amateur Radio Prefixes (World) Map
Countries List
Great Circle DX Map.
ORA Locator Map (Western Europe) **(in tube).**
ORA Locator Map (Western Europe) **(on card).**
VHF/UHF band plans **(on card).**

USA PUBLICATIONS

Radio Publications Incorporated
Beam Antenna Handbook
Better Short Wave Reception.
Cubical Quad Antennas.
Simple, Low-Cost Wire Antennas
VHF Handbook

American Radio Relay League:
Antenna Book
Course in Radio Fundamentals
Hints and Kinks.
Mobile Manual
Radio Amateur's Handbook (Paperback)
Radio Amateur's Handbook (Hardback)
Radio Amateur's Operating Manual
Single Sideband for the Radio Amateur
Understanding Amateur Radio
VHF Manual

CQ (Cowan Publishing Corporation):
Amateur Radio DX Handbook
Antenna Handbook, Vol. 1
Antenna Roundup.
Mobile Handbook
RTTY A-Z
RTTY Handbook
Shop and Shack Shortcuts

OTHER PUBLICATIONS

Books and Maps:
Basic Electricity
Basic Theory and Application of Transistors
Counties Map
Dictionary of Electronics
Foundations of Wireless
Guide to Broadcasting Stations
How to Listen to the World
Mullard Data Book
Radio Amateur Operator's Handbook
Radio Valve and Transistor Data
Simple Shortwave Receivers
Transistor Audio and Radio Circuits (Mullard)
World Radio-TV Handbook

MORSE INSTRUCTION AIDS

G3HSC Rythm Method of Morse Tuition —

Complete Course (two 3-speed LP records and one EP record plus books)

Beginner's Course (one 3-speed LP record and one EP record plus books)

Beginner's LP (0-15 w.p.m.) plus book
Advanced LP (9-42 w.p.m.) plus book
Three-speed simulated PO test, 7 in. QS EP record.

USA LESSON OUTLINE FOR AMATEUR ADVANCED/EXTRA CLASS STUDY

FIRST NIGHT

The advantages to owning an amateur advanced or extra class ticket as expressed in the FCC regulations. Topics include definitions of types of station (e.g. military recreation and auxiliary link), HAAT, frequencies and emissions allowed to advanced and extra class operators, special call signs, remotely controlled stations, and others.

AC THEORY

Circuit theory emphasizing phase. Topics include crystal and mechanical filters, time constant, phase angle, power factor, transformers, filter sections, and the bridge rectifier.

SOLID STATE DEVICES

The theory of operation and uses for various devices including transistor characteristics. Topics include transistor amplifier circuits, zener diodes, field effect transistors, SCRs, transistor biasing, voltage regulation, current control, and special types of solid state devices.

VACUUM TUBES

Operation at VHF and above is stressed. Topics include lead inductance and transit time, triodes and grounded grid amplifiers, single cavity Klystrons, vidicons, and lighthouse tubes.

AMPLIFIERS AND OSCILLATORS

Special purpose amplifiers for various applications and transistor oscillators. Topics include RF power amplifiers, cathode/emitter follower circuits, push-pull and parallel amplifiers, phase inverters, frequency multipliers, Klystron amplifiers, the Colpitts harmonic oscillator and others.

ADVANCED MODULATION CONCEPTS

Involving capabilities and problems of AM and FM emissions with methods of modulation and sidebands. Topics include modulation capability, overmodulation, splatter, deviation, modulation systems, carrier wave distortion, FM sidebands and others.

EXOTIC MODES OF COMMUNICATIONS

SSTV, RTTY, FAX, satellite, moonbounce. Topics include classification of emissions, modulation mode versus frequency, circuit and system diagrams, operating principles and practices, and others. This should be a topic of major emphasis.

ANTENNAS AND FEEDLINES

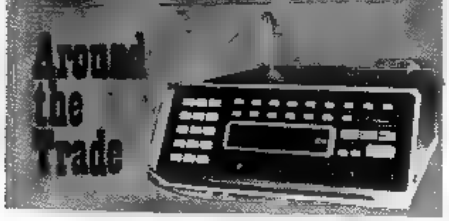
Types of antennas and their characteristics and the factors affecting power handling capabilities of feedlines. Topics include end fed Hertz, end fed Zep, folded flat top dual band and other antenna types, directive antenna construction, characteristics and nomenclature and discontinuities, resonant lengths and electrical lengths of transmission lines.

ADVANCED PROPAGATION

Topics include aurora, absorption, sporadic E, attenuation by the atmosphere, meteor bursts, and other phenomena that effect signal propagation.

TESTING AND ELECTRO-MAGETIC INTERFERENCE

Measuring field strength and RF power and current, theory of the cathode ray tube oscilloscope, radio frequency interference including TVI, and automotive interference are topics covered in this part. ■



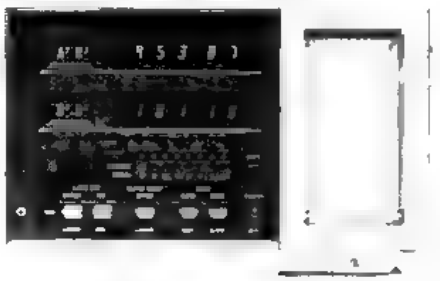
OMEGA RECEIVER FROM JAPAN RADIO COMPANY LTD.

The high performance Omega receiver from JRC is the result of extensive development and experience gained from their already respected range of VLF receivers.

Measuring only 29 cm across, the instrument is noteworthy for its compact chart recorder and its ability to automatically track up to eight phase coherent Omega stations.

Constant monitoring of measuring conditions of the Omega stations is accomplished by use of LSI CMOS technology. Should any stations signal to noise ratio become unacceptable the operator is warned of a possible tracking anomaly by an audible tone and station identification lamp flicker. For added convenience, automatic lane centering is maintained. Segment synchronization is also automatic although manual operation can be performed at the touch of a button.

Improved reliability and performance and reduced power consumption, size and price put the instrument into the grasp of everyone.



Improved specifications read

Model JLA102: Frequency, 10.2 kHz, sensitivity, 0.01 uV; dynamic range, 90 dB, resolution, 1 CEL; frequency reference, 4 MHz of 2 x 10–8 stability offering an operating temperature range of —10° to +50°C; power requirements, 110V AC/240V AC/24V DC.

Power fail protection available as an option. Whip antennas and other accessories also available.

For other information contact Vicom International Pty. Limited, Professional Products Division, 68 Eastern Road, South Melbourne 3205, Victoria. Phone (03) 699 6700. ■

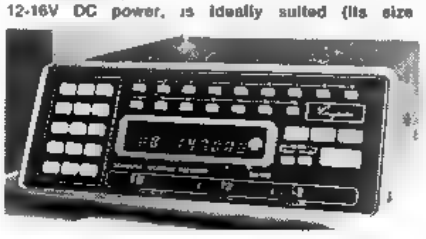
NEW PROGRAMMABLE 16 CHANNEL VHF/UHF SCANNING RECEIVER

GFS Electronic Imports at Mitcham, Victoria, have just announced the release of a new Crystal-less Programmable VHF/UHF scanning monitor receiver. The receiver, manufactured in Japan by JIL, for whom GFS are Australian agents, is known as the SX-100.

Using microprocessor control any 16 of approximately 32,000 channels between 30-54 MHz, 140-180 MHz and 410-514 MHz can be programmed into the SX-100's memory by just punching up the required frequencies on its control keyboard. Unlike similar units the SX-100 covers the 6 metre, 2 metre and 70 cm amateur bands as well as the UHF CB band.

Frequency readout, channel number, time and date display are all provided by a large green digital readout. Both scanning speed and scanning delay can be varied from front panel controls. Sensitivity is very high at 0.5 uV.

The SX-100, which works from 220-240V AC or 12-16V DC power, is ideally suited (its size is 21H x 7W x23D cms) to installation in the car or for base operation from the home or office. It represents quite an advantage to the Hams, UHF, CBers and those just interested in listening.



The SX-100 sells for $299 plus sales tax (or $392 incl. sales tax). For more information contact GFS Electronic Imports, 15 McKeon Road, Mitcham 3132, or phone (03) 873 3939. ■

NEW 3½ DIGIT LAB DMM

Parameters announce the new B & K-Precision Model 2830 3½ Digit Lab DMM which is well suited for all types of lab or bench operation. The bright 0.43 in. high LED display is visible under virtually all types of lighting conditions.

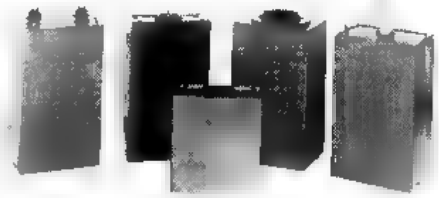
Current ranges are to 10 amps and voltage ranges extend to 1000 V DC and 750V AC. Seven ohms ranges provide measurement capability from 0.01 ohm to 20 megohms.

All ranges and functions of the 2830 are well protected against the accidental application of +1000V DC, —450V DC or 300V AC RMS.

For further information contact Bruce McCarthy, Parameters Pty. Ltd., 68 Alexander Street, Crows Nest, NSW 2065. Phone 439 3288. ■

ENERGY STORAGE CAPACITORS

A new Series of "Energy Storage Capacitors", manufactured by Capacitor Specialist, Inc., is now available from Singer Products Company, Inc., New York.



These capacitors use a dielectric system of film, paper, and non-flammable, non-PCB oil. This new ES Series offers 127 models in bushing styles.

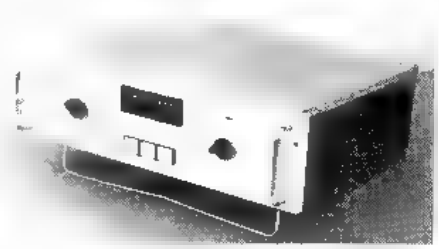
Voltage ratings from 3 kV to 125 kV are available with current ratings to 250 kA. The widest temperature range ever of —35°C to +70°C and the lowest losses yet (.0012 maximum), allow operation at up to 100 PPS. Energy storage up to 8750 joules in a can 11 x 14 x 25 inches is available in small quantities at prices of 10-13 cents per joule, depending on the voltage.

For additional information, contact Mr. Gil Williams, Electronics Division, Singer Products Company, Inc., One World Trade Center, New York, NY 10048. ■

AUTOMATIC CIRCUIT TESTER

The Model 703 Circuit Tester manufactured by Slaughter Company, is now offered by Singer Products Company Inc., New York, NY.

The Model 703 is a compact, high speed microprocessor that can be used for testing cable and harness assemblies, back planes and similar devices. It can be self-programmed and can also be operated by an unskilled person.



The microprocessor provides up to four preestablished permanent programmes of up to 250 conductors each. Digital readout is provided to indicate not only the nature of the fault detected, but also its location.

For additional information contact Mr. Gil Williams, Singer Products Company, Inc., 1 World Trade Center, Suite 2365, New York, NY 10048. ■

THE PERFECT MOBILE RIG . . .

ATLAS 210X/215X — 5 BAND — 200 WATT All Solid State HF SSB/CW Transceiver

STILL THE MOST POWERFUL MOBILE RIG ON THE MARKET
PRICE WITH NOISE BLANKER INSTALLED **$852** INCLUDING TAX.
GENERAL SPECIFICATIONS
FREQUENCY COVERAGE WITH INTERNAL VFO: 1800-2000 kHz (Model 215X only), 3500-4000 kHz, 7000-7500 kHz, 14,000-14,500 kHz 21 000-21,500 kHz, 28.400-29,400 (Model 210X only). Note that 10m band may be easily owner adjusted to cover any 1000 kHz segment
FREQUENCY CONTROL Highly stable VFO common to both receive and transmit modes. Less than 1 kHz drift during the first 30 minutes. Less than 300 Hz per hour after 30 min
ALL SOLID STATE DESIGN 4 ICs, 18 transistors, 32 diodes.
MODES OF OPERATION SSB (USB, LSB), CW
MODULAR CONSTRUCTION With plug in PC boards
PLUG IN DESIGN Antenna, mike, extension speaker and power supply connections, etc., are automatically made when set is plugged into special mobile mount or AC power supply console.
POWER REQUIREMENTS 12-14V DC, 16 amps peak on transmit 300-600 mA in receive
DIMENSIONS 24.1 cm wide, 8.9 cm high, 24.1 cm deep
WEIGHT 3.1 kg (6 lb. 14 oz.)

ACCESSORIES

DMK — Plug in mobile mount for mobile and maritime mobile use	$63
DD6-C — Self-contained digital readout	$236
10XB — Self-contained external crystal oscillator for fixed channel operation both inside and outside normal VFO band edges	$85
MTI — Mobile antenna matching transformer. Changes base impedance of antenna to 50 ohms	$45
DCC — DC battery cable with plug. Not required if DMK is purchased	$15
220CS — 110/220V AC console power supply	$210

OTHER ACCESSORIES AVAILABLE

INTRODUCING TO AUSTRALIAN AMATEURS . . .

THE UNIQUE WIDE RANGE WIRE TUNER

The Unique Wide Range Wire Tuner will provide a *perfect* match to nearly any single wire fed antenna system in the frequency range 1.7 MHz to 30 MHz. It provides the *broadest tuning range* of any antenna coupling device on the amateur market. At 6⅝ in. wide, 5⅝ in. high and 12½ in. deep, it is compact in size and capable of handling in excess of 1500 watts of *output power* through its *continuously* variable LC combination. There are no gaps between tapped setting as found on most transmatch devices enabling *any* frequency within the specified range to be matched. It is therefore suitable for other than amateur services in the MF and HF spectrum.

It is ideal for portable and maritime mobile operation where space and/or lack of time precludes the use of various resonant antennas. Herb Johnson, President of Atlas Radio uses one on his own yacht and recommends their use with Atlas equipment. Construction is of first quality materials throughout.

Write or phone for further information and full technical specifications.

PRICE: $295 — SALES TAX AND DUTY PAID
GUARANTEED FOR ONE YEAR

ALSO AVAILABLE:

Shure 404C PTT hand held mike	$35
Shure desk mike	

NOTE The Atlas 350XL will be in stock again as soon as it is back in production. It is temporarily out of production while Atlas concentrate on a new small model, thus increasing their range to three models.

EDDIE ROOMS B.Comm.(Melb.) VK3NRR/Z??

Office: 12 BAILEY ST., BAIRNSDALE, VIC. 3875. (051) 52 2822
Melbourne Enquiries: (03) 547 5860

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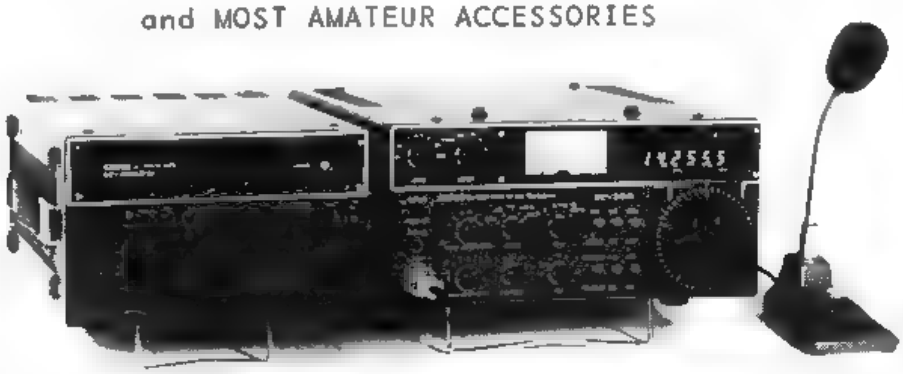
POPULAR BRANDS OF H.F. & V.H.F. TRANSCEIVERS, ANTENNAE, ROTATORS

and MOST AMATEUR ACCESSORIES



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WAREHOUSE: 78 CHAPMAN PDE., FAULCONBRIDGE
TELEPHONE (047) 51-1394 A.H. (047) 54-1392

Some price reductions on KENWOOD products. Ample stocks of Hy-gain antennas at below prices replacement costs. A new W2-AU type watertight U.S.A. 1-KW balun. A new model KYOKUTO 15-W, 2-M, FM transceiver FM-2016A, 800 channel with 4-channel memory and scanner expected soon, estimated cost $360

HY-GAIN ANTENNAS:

12-AVQ 10-15-20M vertical	$50
18-AVT/WB 10-80M vertical	$125
TH6-DXX 10-15-20M 6-el yagi	$300
TH3-MK3 10-15-20M 3-el yagi	$260
TH3-JR 10-15-20M 3-el yagi	$175
204-BA 20M 4-el tiger array	$230
2M 5-el yagi w/balun 6'3" boom	$25
2M 8-el yagi w/balun 12'5" boom	$30
2M 14-el yagi w/balun 15'6" boom	$40
BN-86 balun for beam buyers	$20

ANTENNAS SUITABLE FOR 10M:

11M 5-el yagi 17' boom	$70
11M CLR-2 5/8W w/3-radials	$40
HY-Q (USA) 50-ohm balun	$15

ROTATORS AND CABLES:

All rotators for 28V AC operation-KEN KR-400 medium duty	$125
CDR BT-1A light duty w/push button programmable	$90
CDR ham III heavy duty	$175
CDR tail twister extra H/duty	$225
Bottom bracket CDR rotators	$10
KS-065 stay/thrust bearing 1¼" to 2½" masts	$25
RG-58U co-ax cable, per yd	30c
RG-8U foam co-ax cable, per yd	80c
8-cond rotator cable, per yd	60c
⅞" H.D. VHF/UHF co-ax, per yd	$3
CABLE-cutting and packing	$1.50

ACCESSORIES

Voltage regulator 18V AC input 12V DC 3A output	$23
240/18V AC transformer	$10
5M RG-58U w/PL-259 one end	$2.50
Bumper mountas ⅜ ' 24-thread	$5
Gutter mounts ⅜" 24-thread	$3

CO-AX CONNECTORS

PL-259-SO-239-cable joiners, ea	75c
Right angles & T connectors, ea	$1.50
GLP right angles RG-58U to SO-239 w/lock nut & weatherproof cap	$2.50

KENWOOD PRODUCTS

TS-520S 10-160M transceiver	$675
TS-820S digital transceiver	$1100
TS-700SP 2M all mode trans.	$850
TS-120V 10-80M mobile trans.	$550
TR-7600 10W 2M FM trans.	$400
TR-7625 25W 2M FM trans.	P.O.A.
TL-922 10-160M linear amp.	$1100
DK-520 adaptor (TS-520)	$15
LF-30A low pass filter	$25
TV-502 2M transverter	$300
AT-200 antenna matchbox	$175
DS-1A DC/DC converter	$75
VFO-820 for TS-820S	$185
VFO-520S for TS-520S	$160
SP-520 for TS-520S	$30
YG-3395C CW filter (TS-520S)	$50
MC-50 desk microphone	$50
MC-10 hand held microphone	$20
HC-2 ham clock	$35
BS-5 and BS-8 pan adaptors ea	$65

YAESU-MUSEN PRODUCTS

FT-7 10-80M mobile trans.	$450
FT-301S 10-160M mobile trans	$600
FRG-7 5-30Mhz receiver	$319

NOVICE SPECIALS — TRANSCEIVERS

10M Sideband SE-502 USB/AM 15W PEP-240V AC 12V DC-inbuilt SWR/RF meter 28 3-28 6 mhz-clarifier tuning transmit and receive	$150
10M Universe 224-M USB/AM 15W PEP 12V DC 24-ch 28 480 to 28 595 mhz, 5-khz steps-clarifier tuning transmit and receive	$125
CONVERSION CRYSTALS for amateur licence holders —set of 8-crystals to convert 23-ch 27-mhz CB units to 28-mhz. Suitable for Kraco, Sideband, Universe, Hy-range V etc., converts as per Universe 10M above — CRYSTALS and instructions	$40

Double female connectors	80c
In-line mic sockets 3 & 4-pin ea	75c
Mic sockets 3 and 4-pin, ea	75c
MLS right angle-RG58U to PL-259	90c

All prices are NET, EX SPRINGWOOD NSW, cash with order. Prices are subject to change without prior notice. All risk insurance is free: freight by air, road, rail or post at cost. All orders cleared on a 24-hour basis after receipt of order with payment.

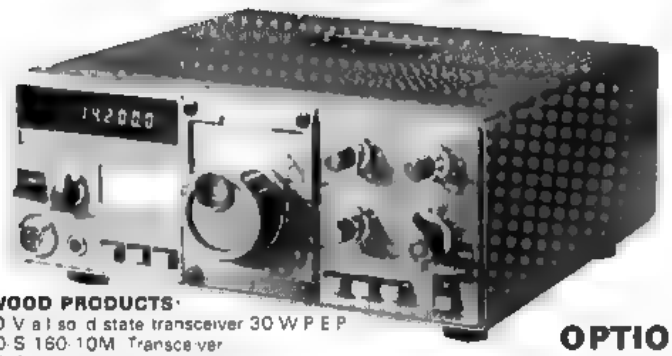
Arie Bles (VK-2AVA) Proprietor **Roy Lopez (VK-2BRL) Manager**

Sideband Electronics Sales

TRIO KENWOOD COMMUNICATION CENTRE

Trio-Kenwood Amateur Equipment
Trio-Kenwood Test Instruments
B & K Precision Test Instruments.

KENWOOD



KENWOOD PRODUCTS
TS 120 V all solid state transceiver 30 W P E P
TS-520 S 160-10M Transceiver
TS 820-S 160-10 M Transceiver
R-820-S 160 M Transceiver
R-820 Communications receiver
TS-700-SP All mode 2M transceiver.
TS-600-A All mode transceiver
TS-7000 A 2 M FM 25W Transceiver
TR-7500 2 M FM 10 W transceiver
TR 7600 2 M FM digital transceiver 800 CH
TR-8300 70 CM FM Transceiver
VB 2200-A. Power booster for TR-2200
VFO-30-G Remote VFO for TR-7200 TX-12 MHZ-RX. 45. MHZ.

OPTIONAL ACCESSARIES
VFO-120
PS-20
MB-100
YK-88C
SP-120

KENWOOD PRODUCTS
TR-7200 G 2 M FM 10 W Transceiver
TR 7010 2 M SSB 10 W PEP Transceiver
TV 502 2 M Transverter
TV 506 6 M Transverter
TL 922 2 KW PEP Linear amplifier
SP 8 Regulated Power supply 8 Amps
VFO 520 S External VFO for 520-S
VFO 820 - External VFO for 820-S
VFO 700 S External VFO for TS-700-SP
SM 220 Station monitor
BS-8 and BS-5 PAN adaptor
SP-820 Deluxe Speaker consu
SP 520 Speaker consu
SP-70 Speaker consul for TS-700 & 600
VOX 3 Vox unit for TS-700 & TS-800
DS-1-A DC converter for 520-S & 820-S
DG-5 External digital display TS 520-S
AT-200 Antenna coupler
MC-30-S Microphone 500 OHM
MC 35-S Microphone 50 K OHM
MC-10 Microphone 50. K OHM
MC-50 Deluxe desk Microphone dual imp
HC-2 Deluxe Ham clock
YG-68 CW filter for TS-820
YC-3395 CW filter for TS-520
LA-30-A Lowpass filter
HS-5 Headphone
HS-4 Headphone
RD-15 Dummy load 450 MHZ 15 Watts
RD-300 Dummy load 150 MHZ 300 Watts

HY-GAIN ANTENNAS

12-AVQ 10-15-20M vertical 13 ½" tall	$50
18-AVT/WB 10-80M vertical 23 ' tall	$125
TH6-DXX 10-15-20M senior 6 el yagi 24' boom	$300
TH3-MK3 10-15-20M senior 3 el yagi 14' boom	$240
TH3-JR 10-15-20M junior 3 el. yagi 12' boom	$175
204-BA 20M 4 el Tiger Array 26' boom	$230
HY-QUAD 10-15-20M full size cubical quad	$260
2M 5 el. Yagi w/balun 6 3" boom.	$25
2M 8 el. Yagi w/balun 12'5 ' boom	$30
2M 14 el Yag w/balun 15'6 ' boom	$40
BN-86 Balun 50 ohm 1 1	$20
BJ 5 Balun 50 ohm 1:1	$14

ANTENNAS SUITABLE FOR 10M

11M 5 e Yag 17' boom	$70
11M ¼ wave G P w/3 radials.	$20
CLR 5/8 wave vert w/4 radials 22'9½" 11M.	$50
CLR 2 5/8 wave vert w/3 radials 19 10" 11M	$40

ROTATORS AND CABLE

KEN KR 400 rotator medium duty 28V AC	$125
CDE HAM L11 rotator heavy duty	$175
RG-8U Polyfoam Coax	80c per yard
RG-58J Coax	30c per yard
8 core rotator cable	65c per yard

SKY-BAND MOBILE HELICAL ANTENNAS

SKY 80 six feet long 3 5 MHz	$28
SKY 40 six feet long 7 060	$26
SKY 20 six feet long 14.150	$26
SKY 15 six feet long 21 100	$25
SKY 10 six feet long 28 500	$24

CRYSTAL FILTER, 9 MHz, similar to FT-200 ones. With carrier crystals. $39

COAX CABLE CONNECTORS
PL-259
SO-239 Chassis Mount
Male to male joiner
Female to female joiner
Angle connector

Accessories

SWR 50A 3 5 150Mhz SWR meter	$26
12VDC regulated supply	$26
5M RG 58-U w/PL 259 one end	$3
Bumper mount c/with 3/8" 24-thread ant. mount	$7
Gutter mount c/with 3/8" 24 thread ant mount	$4 50

SIDEBAND ELECTRONICS SALES, 477-479 PACIFIC HIGHWAY, CROWS NEST. PHONE 438 4191.

KENWOOD AMATEUR RADIO EQUIPMENT

MAIL ORDERS: P.O. BOX 184, SUTHERLAND 2232. **PETER SCHULZ, VK2ZXL**

VK/ZL/OCEANIA DX CONTEST 1978: FOREIGN RESULTS

CW RESULTS

Oceania.

KH6IJ	482

S. America

PY1DHG	414
YV1OB	7136

N. America:

HP1AC	1260
KL7HBK	55
VE4MF	252
VE3HAB	8
AC1O	3425
W1DMD	390
N2LT	2812
WA2ZWH	52
W3TV	6562
N3RL	640
W3ARK	check
WB4RUA	112
W5SOD	300
N6JM	492
W6DWJ	40
N6OB	check
N7DF	3220
W7TY	2200
W7KPL	1512
K9BG	1349
K9AB	945
W9QWM	520
K0FX	6272
W0IUB	1377
WB0GOB	1031

Europe:

DU7M	6603
DL1UF	3080
DF0SAR	1681
DK8B	481
DL1QM	224
DL0KF*	2564
EA2IA	792
EA7AAW	154
EA3P	126
EA4BV	8
F6DCO	1628
F6API	192
F2VO	120
G3DYY	2280
G3ESF	1660
G3KSH	570
G5MY	384
G8UM	48
GM3KLA	400
HB9IK	2389
HB9DX	764
I5YDI	728
HA4XX	826
HA2KRZ	480
HA7UU	168
HA7SU	8
HA5KFL*	1230
LA5SH	2398
LA3UG	26
LZ1WI	176
OE1DSA/3	2376
OE1TKW	250
OH9TM	3672
OH3AA	2325
OH6MK	1036
OH6RC	704
OH1KA	500
OH7NW	374
OH3NU	240
OH7TA	189
OH5SS	114
OH1PU	58
OH2BOE	44
OH2BOI	6
OH7WZ	5
OK3VSZ	2622
OK2OX	2375
OK1AMI	858
OK3OM	582
OK2BMH	550
OK2YAX	510
OK1SMP	396
OK1ATZ	364
OK3CEE	350
OK1TW	304
OK1MAW	288
OK3CKA	270
OK1MGW	243
OK2BEM	225
OK3YCA	176
OK2BPK	168
OK1FCA	76
OK2ABU	60
OK3CAU	50
OK1FBH	48
OK3YCV	18
OK1KYS	18
OK2PBN	18
OK3TCK	8
OK2SGW	8
OK1KZ	4
OK3BA	2
OK1DMP	check
OK1KSO*	4347
OK3KGI*	1180
OK1KQJ*	144
OK1KCH*	70
OK2KQO*	12
OK3KTV*	check
ON4XG	1026
ON6WK	624
OZ7BW	1650
OZ1DTF	520
OZ1LO	504
OZ1BI	494
PA0WRS	243
PA0UV	70
SM6CMU	2645
SM7BKH	288
SM3EF	225
SM7AAQ	18
SM6BBX	2
SM0CMH	check
SP6AZ	378
SP6HEK	260
SP4PBI	60
SP2BKF	18
SP2AVE	check
SM0BVQ	182
SM5BGA	48
SM7HEC	8
SM7CZC	8

Asia:

HS1ABD	3120
JA1EMX	20220
JA1AFF	8695
JA1YFL	6984
JA1BHJ	4704
JA1GLT	4108
JA1YFG	1440
JF1FTU	297
JA1LB	90
JK1LUY	8
JA2IU	7440
JH2LES	6882
JA2BT	6820
JA2OJ	6768
JA2WB	6464
JA2YKA	3472
JA2CUO	1632
JA2ND	552
JA2QZU	504
JH2UEV	408
JR2BDF	252
JE2GMO	232
JE2MDF	90
JF3LBD	7006
JR3WXA	3990
JA3BRB	3294
JA3AA	2058
JA3BKC	1782
JA3ARM	1001
JH3CXL	490
JA3PJB	259
JF3XYL	208
JA4AXB	5562
JA4DZ	341
PH4DRB	61
JH4LGA	18
JH3BJN/4	2
JA5IQD	1428
JA5IU	234
JA6GU	5172
JA6CNL	576
JA7JAA	7141
JA7JWF	5859
JA7ARW	1512
JA7UFZ	600
JA7GAX	208
JA7AOU	120
JA9DGI	3696
JA9DCP	2109
JA9AQE	1040
JA0ROV	2875
JA0XD	2300
JA0GZ	2

USSR:

UA1DZ	8820
UA1AGK	1408
UA1ZCP	539
UK1AAA*	6944
UK1ZAO*	2166
UC2DCH	80
UK2WAF*	1638
UP2NV	5832
UP2BAO	741
UP2BFI	540
UP2MB	406
UP2BFE	243
UP2BBF	12
UP2BEL	2
UP2BCS	check
UP2BFB	check
UK2PCR*	6061
UK2PRC*	2592
UQ2OC	1833
UK2GKW*	7106
UK2GAC	5346
UR2QD	3326
UR2OI	32
UA4AEB	2
UK4WAR*	5100
UK4WAB*	4582
UO5AP	1368
UO5GR	742
UV3HD	600
UA3TDK	459
UZ3ER	440
UA3ST	260
UA3QEL	154
UA3TAM	18
UW3UO	check
UA3AEZ	check
UA3MCJ	check
UA3XBB	check
UA3ESN	check
UB5JIM	1827
UB5KAK	390
UB5OE	192
UB5ZEL	12
UB5UBV	check
UB5ZA	check
UK5WBG*	6344
UK5WAG*	936
UK5QBE*	342
UK5WAZ*	check
UA6LFQ	580
UA6YBH	240
UA6APP	check
UA6LXZ	check
UK6AAJ*	6216
UK6LEZ*	3358
UK6APA*	1944
UK6FAA*	286
UK6FGF*	270
UL7PA	792
UL7PQ	533
UL7GBY	84
UL7CAD	check
UH2HBR	108
UM8MAQ	216
UM8MBA	40
UW9PT	2600
UA9OBL	2070
UA9NN	1212
UA9ADQ	536
UA9HBD	767
UA9OS	check
UA9TS	check
UA9OFB	check
UW0IX	5208
UA0ZCJ	2709
UA0ACM	1500
UA0QWB	1067
UA0KBY	530
UA0AP	495
UA0SH	344
UA0LS	180
UA0KBZ	115
UA0LEO	check
UK0FAA*	8420
UK0ZAB	7385
UK0QAH	98
UK0BAA	check
DF0SAR	6699
DL1SV	1440
DF2HL	559
DL9HN	507
HA4YQ	416
HA4XX	140
HA0MM	45
HA5KFL*	5768
HA3KNA	240
F6DCO	624
F6BVB	195
G3RRS	10230
G8JM	24
GM4GPN	304
HB9DX	140
I4CSP	110
OH3PB	2340
OH2BMP	960
OH7NW	184
OH2PM	144
OH3AA	70
OH1PU	20
OK1AVU	3925
OK1DA	784
OK2BUR	210
OK1DKS	156
OK2ABU	90
OK2YAX	60
OK1AFB	40
OK1CIJ	24
OK1KQJ	18
OK1KZ	2
OK1JST	check
OK1KSO*	4048
OK3VSZ*	3916
OK1KYS*	308
OK1KIR*	24
LA2AO	930
LA1NG	559
LA9GV	133
LA9ZV	72
LA9ML	check
LZ1HP	168
LZ1WI	5
OE1DSA/3	4488
SP3DOI	24024
SP6PZB	2751
SP5BT	1140
SP6GVU	108
SM6HHN	624
SM5CSS	30
YU2RQX	6375
S54EP	360
OZ5KF	21774
OZ5EV	8085
OZ2BM	240
OZ1ZE	60
OZ8XW	check
PI1ARS	728

Asia

HM0U	4758
JR1WHW	20720
JH1BUW	4628
JI1PCN	2058
JK1OLP	666
JF1FTU	432
JA1AAT	378
JA1YFG	329
JE1JBG	180
JG1TIX	133
JK1JEQ	30
JH1OEL	8
JA2HLX	19608
JA2YKA	4466
JE2IEQ	2970
JA2MQJ	2652
JH2FTH	2484
JA2YXV	2424
JE2PKD	1416
JA2FSM	1071
JA2LFG	1068
JR2BDG	279
JE2MDF	216
JH2LES	198
JF2FHQ	192
JA2OU	114
JA2GFS	85
JA3ZB	15610
JR3WXA	1134
JR3CVO	990
JA3NMV	928
JR3CVJ	770
JA3MFE	440
JF3CCF	90
JH4FF	10050
JA4ZQA	2139
JH4ARN	1848
JA4DZ	1716
JH4WTE	648
JH4LT	322
JH4LGA	72
JA5IU	605
JH5EYD	252
JA5ANP	18
JA6WSB	19499
JA6CNL	6014
JA6CQS	2440
JA6GGD	1712
JR6CMS	1515
JR6CEB	1056
JA6GFU	456
JA6PL	432
JA7GLB	23946
JA7FAB	11865
JH7JGG	2674
JH7XGN	2632
JE3DYW/7	1946
JA7BAL	1540
JA7CUK	558
JA8SW	3654
JA8RUZ	1760
JA8CEA	1653
JA8EJO	100
JA8DHI	78
JA9AQE	9906
JA9UX	376
JA0UCJ	15059
JA0CIY	4906
JA0FMB	4320
JH0FUC	3740
JA0GZ	114
JH0FQM	80
JA0TVA	32

USSR

UA1DZ	11560
UA1MU	1574
UA1AWO	check
UK1ZAA*	1080
UC2CW	1740
UC2CEK	182
UK2AAP*	140
UK2WAF*	114
UP2NV	9672
UP2BAS	2916
UP2BAR	432
UK2PCR*	4617
UK2GKW*	13140
UR2QA	737
UR2RL	540
UV3CE	7224
UV3GZ	770
UA3QBP	480
UA3DKF	90
UA3DLH	4
UA3AEZ	check
UA3DDF	check
UA3AGG	check
UA3TAG	check
UK3ABO*	4176
UW4NH	18
UA4ACP	check
UK4WAB*	2120
UK4UAC*	check
UB5MGG	3933
UB5WE	1584
UB5 UD	1242
UB5UCC	750
UB5VAZ	546
UT5NU	288
UB5QD	222

* Indicates Club Station.

SM results are not all in order of merit

PHONE RESULTS

Oceania:

KH6IJ	140

S. America:

PY3CB	11984
PY3NS	810
LU9DM	1632

N. America:

KZ5FR	3900
OX3BX	1364
CH3GCO	7202
VE3EVK	1350
VE7DTO	671
VE7VT	400
VE1BNN	52
XE1VV	2110
XE1LLS	1578
KA1BQ	8568
K1MEM	4872
WB1EUB	24
N2LT	4610
W2FCR	690
WA2ZWH	270
W2CC	102
W2HF	check
W3TV	5760
N3RL	2184
WA4QMQ	720
K5DEC	52
N6AR	20360
W6TYX	8274
W6DWJ	2
K0UK	20292
WA0TKJ	6859
W0IUB	1287

Europe:

EA3NA	720
EA2IA	231
DJ7MI	11798
DL8PC	100700

UB5VBY	176	UL7PQ	40	HA5	063	432		UA3	121	1518	520
RB5 OV	100	UL7PAT	check	NL	5720	7		UA4	09543		13148
UB5HDX	32	UJ8JCL	2	OK1	21672	138		UA4	091148		220
LB5ABK	check	UM8MBW	126	OK1	18684	48		UB5	060	333	4077
UK5WAG*	470	UM8NNN	2	ONL	383	2500		UB5	073	1801	1848
UO5GR	1024	LA900	4929	SP	0006/SK	1569		UB5	071	346	342
UO5DN	486	UV9PP	3580					UO5	03927		2318
UO5OWS	84	UA9FU	3510	**Asia:**				UA6	108	1387	1100
UO5AP	check	RA9CGC	960	JA1	22569	14432		UD6	001	220	260
UO5OAK	132	UA9ODK	868	JA1	22728	7200		UL7	018	99	3336
UA6LED	1674	UA9YAT	432	JA1	18277	4710		UL7	179	200	410
UA6LBQ	560	RA9C U	378	JA1	22551	2244		UA9	084	200	20222
UA8LXZ	check	UA9OS	check	JA1	24070	352		UA9	147	197	3130
UK6AA*	4704	UK9UAO*	6727	JA1	25111	2		UA9	158	026	442
UK6LEZ*	4160	UA0NH	2771	JA2	8568	5820		UA6	108	33/UA0	6080
UK8LKP*	1088	UV0EX	1332	JA3	9344	5440		UA0	107	272	2540
UO6DER	3068	UA0CCW	1170	JA6	8331	23222					
UG5JJ	8	UA0BAC	693	JA6	8304	11456					
LL7PBY	1615	UA0PJ	428	JA6	8330	3550					
UL7JAA	819	UA0LEO	check	JA7	6824	18886					
UL7GBP	312	UA0JO	check	JA8	3769	3950					
UL7YR	264	UK0AAC*	7755	JA8	3865	3614					
UL7IBC	70	UK0CBL*	1908								

* Indicates Club Station

NOTE

Many comments — some strongly made — about non-receipt of 1977 results and certificates. The 1977 contest was organised by WIA in Australia and not by NZART. Any queries about the 1977 contest must be made to WIA. Regretfully some logs were incorrectly addressed. Publicity each year gives correct address for logs. NZART organises the contest on "even years" — 1978, 1980, 1982, etc., while WIA does so on alternate years — 1977, 1979, 1981, etc. This year NZART is posting results and certificates in March 1979 (for the 1978 contest). We hope you receive these in good time and will support the contest again.

Good DX and 73,

Jock White ZL2GX,

152 Lytton Road, Gisborne, New Zealand. ■

SWL RESULTS

Europe:

BRS 32525		8750
BRS 25429		2300
BRS 39782		1936
DL 237	12237	216
HE9ILN		9610
HE9EV		1540

SMIRK (SIX METRE INTERNATIONAL RADIO KLUB)

SMIRK is the Six Metre International Radio Klub which promotes six metre operation. There are now over 3000 SMIRK members worldwide and the number in Australia is growthing, thanks to the excellent six metre propagation being experienced.

To join SMIRK you must make contact with three SMIRK members. You then send details of these contacts to the Secretary of SMIRK.

The information required consists of the dates, the times, the call signs, and the SMIRK number of the stations worked. This information, together with a once only fee of $US4, should be sent to the secretary of SMIRK.

The secretary of SMIRK is Ray Clark K5ZMS, 7158 Slonference Drive, San Antonio Texas 78227.

Many JA stations are members as are YJ8KM and FK8AB and FK8AX. So if you go through your list of JAs you may well be eligible.

The following listing will help you sort out the eligible contacts.

JA1UT	2422	JG1WCR	2506	JJ1FDV	2952	JE2GZW	2608	JH3CXU	2324	JR6HNL	2501	JH0DYN	2805
JA1KSO	2859	JG1WWN	2849	JJ1HPR	2747	JE2LRW	2560	JR3DDQ	2362	JR6IIP	2585	VK3OT	2409
JA1LZK	60	JH1AFO	2620	JJ1HPU	2547	JE2NQC	2916	JR3HEO	2608	JA7BZU	2778	VK2ZHZ	2477
JA1NVG	1104	JH1DLD	2313	JJ1HWX	2899	JE2PIS	9519	JR3PEO	2502	JA7ITT	2585	VK2VC	2901
JA1QYO	1833	JH1EMH	2773	JJ1IQR	2467	JE2UAZ	2895	JR3TYL	2879	JA7JGU	2921	VK2BJC	2957
JA1RJU	448	JH1FZZ	2529	JJ1IWS	2575	JH2COZ	2567	JR3WYM	2517	JA7LBI	2543	VK2BNN	2685
JA1SIK	2958	JH1PRV	2589	JJ1JFJ	2996	JH2EEB	2267	JA4DC	2926	JA7MIT	2462	VK2BYX	2744
JA1WPX	2203	JH1UIV	1103	JJ1JRH	2295	JH2FIY	2570	JA4ENN	1779	JA7OUD	2963	VK2YHG	2900
JD1ADP	2909	JH1USR	1634	JJ1KNC	2886	JH2WIC	2510	JA4JDQ	1615	JA7QVI	2475	VK2ZAY	2958
JE1DLS	2466	JH1WCD	2480	JJ1MAI	2574	JR2MWO	2882	JA4KJO	2569	JA7RKL	2874	VK2ZBD	2991
JE1GVR	2380	JH1WHS	2220	JJ1OPX	2468	JR2PUH	2838	JA4MBY	2568	JA7UFZ	2669	VK2ZGF	2864
JE1HYR	922	JH1CBS	2464	JJ1QLQ	2803	JR2SQZ	2509	JA4RSI	2497	JH7APQ	2942	VK2ZZV	2842
JE1KUR	2957	JI1CHH	2321	JJ1QZJ	2837	JR2TBI	2623	JH4JPO	2912	JH7BRW	2551	VK2ZZY	2974
JE1LRC	2504	JI1DLZ	2775	JJ1WGO	2981	JR2VLS	2964	JH4KAY	2522	JH7MSB	2748	VK4QS	2202
JE1PIK	1909	JI1DQP	1830	JJ1WLB	2985	JA3EGE	2474	JA5CAV	2976	JH7POQ	2779	VK4MS	2201
JE1RKX	2546	JI1DXZ	2765	JK1BER	2682	JA3JXJ	2799	JA5HTP	2641	JH7RTQ	2911	VK4RO	2132
JE1RXJ	700	JI1FUC	2437	JK1CDC	2836	JA3PND	2751	JA5ILM	2700	JH7TWQ	2941	VK4ZEZ	2499
JE1TGL	2796	JI1GGU	2677	JK1CMM	2876	JA3PPS	2491	JA5JFB	2552	JH7UBO	2542	VK4ZNC	2566
JE1TGN	2471	JI1HGB	2962	JK1EXO	2884	JE3CYV	2503	JA5MEC	2329	JH7UKK	2713	VK4ZRF	2485
JE1TTI	2699	JI1HHX	1835	JK1EYW	2870	JE3EFZ	2531	JA5PEE	2520	JI7UIP	2924	VK4ZRQ	2455
JE1UWH	2539	JI1JIG	2545	JK1FDA	2850	JE3FCU	2532	JA5XNA	2745	JR7CLB	2904	VK4ZSH	2533
JE1VFQ	2475	JI1KZS	2891	JK1HLD	2943	JE3FJN	2905	JA5XOZ	2599	JA8JDX	2706	VK5KK	2481
JE1VLX	2586	JI1NZX	2940	JK1HYR	2887	JE3KAM	2923	JH5ADQ	2581	JA8JEP	2892	VK5LP	2800
JE1VLX	2586	JI1OUO	2354	JK1KKT	2750	JE3NKW	2982	JH5AYB	2603	JA8MRX	2375	VK5ZJG	2984
JE1WNV	1102	JI1RAK	2673	JK1LUY	2749	JE3NPK	2550	JA6JU	2869	JA8NDB	2584	VK5ZZZ	2910
JF1CXR	2514	JI1TWJ	2512	JK1MIO	2907	JE3TYJ	2456	JA6DUO	2494	JA8PDJ	2527	VK6BV	2600
JF1EPK	2680	JI1UHU	2670	JK1OIV	2920	JE3WBH	2922	JA6FEU	2495	JH8DEH	2712	VK6ZDY	1722
JF1GQM	2485	JI1VLO	2469	JK1PZW	2854	JE3WNS	2719	JA6IDJ	2651	JH8FYB	2830	VK6ZHE	2894
JF1JLW	2493	JI1VLV	1788	JK1VMR	2986	JE3XWH	2720	JA6IMJ	2521	JH8GIJ	2875	VK7JG	2980
JF1OEC	2304	JI1VYO	2285	JL1CQJ	2987	JF3AKI	2992	JA6LLA	2492	JH8GWW	2484	VK8GB	2314
JF1PHO	2721	JI1WLL	2919	JR1MOK	1046	JF3ARQ	2576	JA6MCD	2928	JH8HWL	2583	VK9ZR	2890
JF1TYO	2584	JI1XPE	2453	JR1PSX	966	JF3BOO	2965	JA8RJK	2587	JH8IQJ	2845	DU1EDS	59
JF1UKJ	2729	JI1XSJ	2683	JR1SQU	1409	JF3GOP	2681	JA6TEW	2549	JA9CGR	2841	DU1PAR	59
JF1UMK	2397	JJ1BDX	2496	JA2TI	2554	JF3HAJ	2718	JH6BPG	2496	JA9CXR	2353	FK8AB	2944
JF1USD	2478	JJ1BEB	2908	JA2BNV	2513	JF3HLP	2848	JH6EYL	2598	JA9DUR	2839	FK8AX	2945
JG1BLN	2853	JJ1BRN	2541	JA2BZY	2158	JF3KQA	2937	JH6FHT	2538	JA9EYY	2548	HL9TG	2880
JG1EKL	2563	JJ1CEI	2312	JA2DDN	2046	JF3LBD	2883	JH6GVX	2511	JA9KGV	2840	HL9WI	97
JG1 IE	2524	JJ1DLZ	2540	JA2HMO	2451	JF3OUE	2835	JH6KYC	2889	JA9ROG	2755	P29HV	2515
JG1OPH	2528	JJ1EIX	2994	JA2ODM	2776	JF3PVT	2838	JH6QFJ	2661	JA0CRQ	61	P29ZDU	2534
JG1RSI	2553	JJ1ENA	2865	JA2QZY	2526	JF3PXG	2861	JH6TZI	2913	JA0JRX	2903	YJ8KM	2446
JG1TGT	2537	JJ1ETD	2544	JE2ACS	2479	JF3TWM	2968	JH6UZR	2597	JA0PPE	2868	YJ8ZV	2843
JG1TRW	2746	JJ1EXV	2754	JE2ARR	2436	JG3AAQ	2814	JH6WGY	2983	JA0WRC	2872		
JG1VKW	2860	JJ1EXY	2754	JE2BBY	2804	JG3DOH	2925	JR6AUV	2898	JH0DHT	2871		

■

VHF-UHF
An expanding world

Eric Jamieson, VK5LP

AMATEUR BAND BEACONS

Freq.	Call Sign Location
50.023	HH2PR — Haiti
50.025	6Y5RC — Jamaica
50.035	ZB2VHF — Gibraltar
50.050	WA1ENX — Maine
50.050	ZS6LN — South Africa
50.050	K6FV — California
50.060	TI2NA — Costa Rica
50.067	WA6MHZ — San Diego
50.068	VE1SIX — New Brunswick
50.065	WA6JRA — Los Angeles
50.092	W7KMA — Oregon
50.096	KG6JIH — Guam
[illegible]	FO8DR — Tahiti
[illegible]	KH6EQI — Pearl Harbour
50.110	KG6JDX — Guam
50.110	JD1YAA — Marcus Island
50.110	KH6HK — Marshall Island
50.300	5B4CY — Cyprus
51.999	YJ8PV — New Caledonia
52.200	VK8VF — Darwin
52.300	VK6RTV — Perth
52.350	VK6RTU — Kalgoorlie
52.400	VK7RNT — Launceston
52.440	VK4RTL — Townsville
52.480	VK2WI — Sydney.
52.500	3D2AA — Fiji
52.500	JA2IGY — Nagoya
52.500	ZL2VHM — Palmerston North
52.510	ZL2MHF — Mt. Climie
52.800	VK6RTW — Albany
53.000	VK5VF — Mt. Lofty
53.100	VK0MA — Mawson
144.101	VK2WI — Sydney
144.400	VK4RTT — Mt. Mowbullan
144.475	VK1RTA — Canberra
144.500	VK6RTW — Albany
144.700	VK3RTG — Vermont
144.800	VK5VF — Mt. Lofty
144.900	VK7RTX — Ulverstone
145.000	VK6RTV — Perth
145.100	ZL1VHF — Auckland
145.150	ZL1VHW — Waikato
145.200	ZL2VHF — Wellington
145.250	ZL2VHP — Palmerston North
145.300	ZL3VHF — Christchurch
145.400	ZL4VHF — Dunedin
432.400	VK4RBB — Brisbane
432.450	VK3RPX — Ballarat
432.475	VK7RTW — Ulverstone

Daphne VK2NXD has written advising receipt of a message on the 10 metre band from N6HZ that there is a beacon in San Francisco on 52.025 MHz. No call sign mentioned.

Ken VK6ZFQ writes from Koolan Island on the north-west coast of WA to say the Es season was quiet this year, worked VK8 once and to Perth three times, no eastern States at all! JAs started again on 2-2-78, but his best effort was to work into Hawaii. On 25-2 heard KH6EQI beacon S9 at 0500Z, then at 0503Z heard KH6JSI calling CQ on 50.200 S9. Ken called on 52.050 and worked AH6AP who was 5 x 6, and received 5 x 3. The beacon stayed until 0700Z at S9 and finally departed at 0750Z. Later JAs were worked and finished the day with a new station KG6JIP at 1230Z.

It appears Ken is getting his share of the DX and I await further news from that area. I have no information whether Ken's contact with AH6AP was the first from VK6 to Hawaii or not. Does anyone know?

CHANNEL 0

Evan VK3ANI has sent a press clipping from the Melbourne "Herald" of 8-2-78 in which the General Manager of Channel 0 said the proposed change to Channel 10 by that station in about nine months would cause little viewer inconvenience.

Evan reports GLV10 at Traralgon will move to Channel 8 and the translator GMV6 to 10 will change output to Channel 6. The more important point, however, seems to be that whilst Channel 0 seems likely to disappear from city areas, assuming eventually, there seems to be increased useage of Channel 0 in other areas, viz., Cairns and now Wynyard. Whilst this arrangement is going to inconvenience some amateurs, it seems the great numbers in the capital city areas may get some eventual respite from the QRM pattern. It does seem a pity therefore, that in the meantime, the amateurs look like being denied access to 50 MHz during the high period of the present sunspot cycle. Even the use of the 50 MHz area on a secondary basis for the time being would be better than nothing!

MELBOURNE REPORT

My old friend Geoff VK3AMK has written with an outline of the DX situation in Melbourne, starting with 5-1-78 when FK8AB and FK8AX were worked. JAs on 6-1, YJ8ZZV on 7-1, then JAs on 14-1, 15-1, 4-2, 12-2, 13-2, then to 14-2 0247 to 0428Z many JAs in 1, 2, 4 and 6 areas. 1058 to 1402Z probably the best opening so far, signals not over strong but very widespread, with JA1, 2, 3, 4, 5, 6 and 9 all being available simultaneously. Some VK3s worked up to 40 stations.

Geoff comments that conditions are very interesting on 6 metres, however, old guidelines which have applied for years seem no longer usable. Band tends to open more frequently, times at which openings occur quite out of character with previous observations during past 16 years. On many days JAs have appeared on up to three different openings during a 24 hour period. First opening is often the best, diminishing as the day progresses. Many new calls being heard for the first time.

Geoff is not happy with the present usage of 52.050, due to some rather thoughtless characters who persist with local QSOs without ever taking a break to see what goes on around them! Would like to see 52.000 to 52.100 for outside VK DX working CW 52.000 to 52.025. Local QSO calling frequency could be shifted to 52.150, with VK DX using up to 52.200, local working above that.

Thanks for your thoughts, Geoff. In general I cannot find a great deal with which to disagree with you on the band plan suggested. Maybe the situation generally is worse in other areas, but here in VK5 there seems on most occasions to be no hassles over 52.050. Stations do work on that frequency during periods of no DX, but with the use of VOX and rapid PTT operation there are ample opportunities as a rule for stations to break in. The fact that stations are in QSO on or around the calling frequency can alert an overseas or other DX station who might also be monitoring that spot, so there are things to be said for and against. I guess the main problem which confronts us all at times is that stations in one area may not be able to hear a DX station being received elsewhere, but perhaps due to Es, an interstate VK may be doing the QRMing. This being so they should move if requested. This is all leading up to the fact that I would very much dislike any move made at present to change the 6 metre calling frequency from 52.050, when so much effort has been made to get it well known overseas. From feedback I am getting and contacts made, it has become well known in many places as our calling frequency. For the time being, let's preserve it as that, mainly by sensible usage.

STATE RECORD ON 10 GHz

The WA VHF Group Newsletter advises that Colin VK6CM and Roger VK6NR at 2140 on 14-2-79 created a State first by working a bi-directional contact from Rockingham Beach to the North Pole at Fremantle — an over water path of 25 km on 10 280 GHz. Transmit power was 10 mW into a horn with 17 dB gain. The received signal from a similar horn was mixed by Schottky diodes, with a local oscillator on 10.25 GHz to give a final IF of 30 MHz. FM was used with a deviation of 75 kHz. Signal horizontally polarized and were received at 5 x 1.

[illegible] OVERWAY [illegible]

On 11-2-79 between 2000 and 2030 local, Peter VK5ZCT working from Winters Hill near Port Lincoln, SA, 217 km west of Adelaide accessed and used Channel 6 Bunbury (WA) repeater to work VK6ZHV, VK6ZZ, VK6LU, VK6VG, VK6ZDR, VK6CB, VK6ZIT, VK6WD, VK6HK and VK6XL. Peter was using a 6 element yagi next to his car. It is a very good effort even if through a repeater as Bunbury is about the same longitude as Perth and that city has never been easy to work on 2 metres using any mode. It could have been interesting to see what happened had Peter been able to use SSB.

432 MHz REPEATER

From "The Propagator" I report that Paul VK2ZQT now has a repeater in operation on a manned situation between 6 and 10 p.m. daily in the Illawarra area of NSW. Input is 433.225 and output 436.225. For those who can tune that high it could serve as a beacon at times when the band opens.

USA TO GEELONG

The "GARC" Newsletter reports that on 11-3 the first known opening to USA W6 area took place when signals on the six metre band peaked to S8 and W6 were worked by VK3AOR, VK3ZZX, VK3AKK, some Melbourne stations and Steve VK3OT at Hamilton. They finished the day by working JAs on the band as well.

SIX METRES

We eventually had to get around to it, didn't we? This report covers the period from mid-February to late March, when much mystery and suspense was there to behold. David VK5KK has helped me to fill in the gaps so that I believe it now should be of interest to readers.

The point has been reached where Japanese six metre openings, whether they be day or night, are very common and DX further afield is more prevalent. It is interesting to see the number of JA8 openings since 16-2. The best day by far was 16-3, when the number of JA8 to VK5 contacts alone exceeded 100. Also other good days were 25-2, 4-3, 7-3, 10-3, 13-3, 17-3, 21-3, 26-3 and 29-3 to JA7 to JA8. All times 0000 to 0500Z. Some night time TEP has been extended to the 35°S mark and best days in March were 10th and 12th. No doubt by the time of publication the band will have become a king-size nightmare!

KG6 TO THE FORE

Great interest was centred around KG6DX from 1330 to 1420Z. As a prelude a short brief on the events leading to the opening. Es conditions prevailed from 1000 to VK2 and VK4 with the centre of interest being VK9NI on Norfolk Island. He was worked by VK2s and VK4s and Gerry VK5ZZZ whose patience and mere 10 watts made another country for him at 1030Z. VK9NI holds the key to many new country QSOs since VK9ZNG in 1975 hasn't QSLed for any QSOs including his FIRST EVER contact on VHF (to VK5KK). Later from 1200Z the Japanese were working VK1, 2, 4, 5, 6 and 8 with excellent signals (Es extended Type 2). At 1330Z KG6DX broke into a quick QSO between two VK5s (call signs removed to improve clarity of report) and he went on to work nine VK5s with signals ranging from 5 x 6 to 5 x 9 + 40 dB! Stations worked were VK5KK, VK5ZZZ, VK5ZMO, VK5LP, VK5ZBJ, VK5ZPS, VK5AVO, VK5ZMJ and VK5SV, plus 6 VK2s with signals from 5 x 5 to 5 x 8 and four VK3s with similar signals. After Joe could no longer hear any further DX from Interstate VK5KK QSOd him again for 20 minutes until signals took a dive. It appears Joe had only just walked into his shack and discovered the opening mid-stream! None of the other active KG6/KH2 stations heard. Only two of the 21 stations had worked KG6 before, and on both occasions it was also Joe at the other end!

NIGHT TIME CONDITIONS

It would seem H44DX on Guadacanal has finally surfaced on 6 metres with a blaze of glory. He has worked KG6, HL9, YJ8, KH6 and many JAs. Also VK9NI has been giving JA another country. Peter YJ8PD (ex VK2YHG) has been lapping up the extra attention on 6 from Pt. Vila with DX every good night. Peter heard on one night KH6EQI for several hours and would you believe AH6AP (Hawaii) was also hearing YJ8PV (beacon) at the same time, but no QSO resulted! Sort of a Russian stand-off! Peter has worked over 150 JAs up to 24-3 and will probably work a few more before he leaves.

DARWIN AND TWO METRES

From Darwin, two metres is really moving with possibilities of DX further afield. If you think the change from tropospheric to ionospheric propagation was dramatic in the case of the 144 MHz record, then just hold your breath. There has now been a second occurrence of TEP-like propagation on 432 MHz, this time between Rhodesia and Greece. SV1AB and SV1RH copied ZE2JV on 432 MHz from 1816 to 1830Z on 20-3. Distance is about 6226 km. ZE2JV is very active in EME circles and most probably was running quite a high ERP but still yet another crossing of the geo-magnetic equator. Who knows what next, maybe VK8 to JA6?

50 MHz (LISTENING!)

HS1SD is active on 50 MHz from Thailand with an IC502 and has worked HL9TG and JAs at night. Also HS1WR will soon be active with a TS600. So yet another country. Graham VK8GB has heard KC6IN from Caroline Islands and K9PNT/DU2 Philippines on 50 MHz, while on 11-3 Graham heard KZ5NW on 50.110 at 0110Z calling CQ at 25 w.p.m. CW! Looks like a few DXQCs (quarter centuries) coming up. VQ9KK is definitely active from Diego Garcia in the Indian Ocean on 6 metres. Diego Garcia is between Malagasy Republic and India. While beaming down that way it may pay to listen for ZS6LN on 50.050 MHz. Jack now runs a 24 hour beacon on that frequency with about 80 watts and 8 elements. He beams towards VK between 0600 and 1000Z. For that path, the VK6-ZS6 MUF will have a reasonable peak during May to 48 MHz so no imagination is needed to see what could happen. Even to here (VK5) the MUF is peaking to 40 MHz at 0730Z each day to ZS. Also HL9WI heard VK8s on 144.11 MHz on 8-3! It's all very involved, isn't it?

DAYTIME CONDITIONS FOR VK-ZL

The number of ZL to W openings has outstripped VK by miles but they still are interesting. As far as VK is concerned most of the action started around 2-3. That opening has already been reported and up to 24-3 there have been no reported two-way contacts to VK4 on 52 MHz. On 4-3 K7KV to VK4RO, WA4TNV/KL7 heard by VK2BYX around 2300Z same day. On 6-3 band open to KH6 from 0745 to at least 0838Z in VK5. The band was open to VK4 via Es and KH6 was simply Type 1 TEP. Es extended KH6EQI averaged 5 x 5 for the period and KH6IAA was 5 x 5 to VK4 and VK5 around 0755Z on 52.050. No contact made to VK3 although since VK3AUO has been worked by KH6NS so the band does open to VK3 from time to time. On 7-3 heard HL9TG on 50.002 at 0315Z at 419, testing with his beam on K7KV. The signals lasted for 5 minutes, long enough to get some calls on tape. Several cards have arrived from SWLs in HM1 and HM2 on three occasions so it is only a matter of time before HL is worked again in lower VK.

VK3 TO W6

On 10-3 Okinawa to VK5. On 11-3 from 2230 to 2345Z the band opened to VK3 from W6. VK3AQR worked six W6XJ, WB6NMT, N6CT, N6HZ, AA6S and K6FV. This is the opening reported earlier in the Geelong notes. VK5DK in Mt Gambier attempted to QSO but without success. Only signal heard in Adelaide was WB6NMT on 50.1 MHz at 2225Z. The extra 300 miles took its toll. It is good to see all contacts were on 52 MHz, and yes, you guessed right, about 90 per cent on 52.050! Looks like the 21 year drought has broken to VK3 now. The day before the best W-ZL opening occurred. From 1800Z (6 a.m. NZ time) to at least 2200Z, all ZL areas worked from W6 (W6XJ worked 11 stations and four W5s also worked into ZL) included was K5ZMS (Smirk No 1), Texas, and K5CEB, New Mexico. Looks like California is not the only place to work ZL1AQR was using crystal locked DSB and ZL3QK was using an 80 metre dipole! Apparently the 600 ohm network ran hot as it was next day in VK3 when Victoria had a public holiday!

DAYTIME CONTINUES

Things did not stop there either. On 13-3 WA4TNV/KL7 on Shemya Island worked nine VK2s, four VK5s (VK5ARZ, VK5KK, VK5RO and VK5V — note, Signals were to 5 x 9 in VK2 and 5. Time 0112 VK5LP was working it, plus VK1RC and VK4AZE to 0350Z. On 52.050 MHz. Yes! Clay runs a Swan 250 into a 1½ wave lambda, 70 feet high! Address Clay Lane WA4TNV/KL7, Box 444, APO Seattle, 98736 USA. All cards for 13-3 sent to VK5 and will have been distributed by April. Return QSLs to above address or via MURO. No VK3 contacts probably no one about. Some stations had time to work Clay a second time, there being no one else to work. WA5TNV/KL7 was heard on 50 MHz again on 18-3 at 2335Z 5 x 6, in VK5 and VK2. From 13-3 to 18-3 scattered reports but no contacts. On 17-3 W6XJ worked VK2BA, VK2ZRH, VK2AIH and partially worked VK2HZ on 52 MHz. From 2225 to 2235Z signals good enough for SSB. Also on 24-3 VK2BA, etc., hearing W6XJ on 50.050 5 x 9+ for two hours. To demonstrate the sharp cut-off of signals, ZL TV on 50.74 at S9+ and no Channel 0 and no VK on 52 MHz but good signals on 50 MHz. Once again, what could happen if VK had 50 MHz! Also KG6DX worked VK2ASZ and VK4ZJB on 52 MHz on 24-3. Northern VK6 working into HL9, etc. W6XJ copied by VK1RC on 17-3.

[redacted]

JAs working W, KL7, LU, PY, CE, etc., as usual. HL9TG worked LU3EX and LU8AHW for a possible new world record on 6 metres (south-east path). HL9TG and HL9WI have also worked WA4TNV/KL7. HL9WI no longer maintains a 24 hour beacon and the following is the only set schedule. Week-days 2100 to 2230Z and week-ends 2100Z to 1000Z on 50.125 MHz. He beams on W during these times with a TS600 and 5 element beam. He is waiting for an amplifier from K6MYC to give 60 watts. HL9TG uses a Heath SB110 with 100 watts and sometimes a TS820 plus converter on receive.

OUT-OF-BAND SIGNALS . . .

but excluding frustrated VKs. From Korea HLKA on 44.25 and HLQX on 40.305 MHz are both studio to transmitter links for Korean broadcast stations in the rice-paddys around Seoul. Also reported from Korea are HLF on 50.193, HLG on 50.837 and HLX on 52.110. All are marine information stations sending QSX on CW. However, they could be harmonics so any information on these would be appreciated. Also various police frequencies from 39 to 45 MHz. We won't tell you all about them, but about the best yet have been from New Orleans, USA, and mobile in Alabama in the 39 to 40 MHz range. Anybody heard any W4s lately? What do you hear in VK2 and VK4 on these frequencies? Only the police and one or two other services use voice in the 30 to 50 MHz range. Many signals are tone-bleepers or pagers with CW ident. Turning north one could be excused for thinking that no two stations speak the same language. Quite a lot of Spanish and French also appearing from the NE and E area. In the near future it is hoped some details will be published on frequency usage and reception equipment.

Anyone wanting circuit details and other information on the PRC10 should contact Mark VK5AVQ (ex VK5ZVQ) as he has the manual.

Now let's get back to earth, or the troposphere at least.

144 MHz AND ABOVE

Two metres and above has been relatively quiet, it seems to be lacking the summer DX crowd. On 4-3 the band was open to VK6 with VK6BE 5 x 4 and VK6XY 5 x 9. Also at 1440Z VK6XY 5 x 5 on 432.1 MHz. The beacon had been evident for three days prior but dismal activity at both end restricted contacts. On 12-3 VK5CK near Mt. Lofty worked VK5YII on 144.3, the ATV net, once again proving those hills we beam over make a good VHF site. VK5KK worked VK3AXV and VK3ARM. Rumour has it a VK3 in western zone of Victoria has a 432 MHz transverter and is expected to fill the gap in activity in that area. Most VK3s currently worked from VK5 have been in Melbourne and further away. It would be good to see the proliferation of 432 stations in VK3 as good as it is in the west, where you have to toss a coin to see what band you will rag-chew on! In the meantime VK5KK remains as QRM on 1296 MHz, but the said contact did in fact eclipse the then world record on that band. Such is life, David.

GOOD OPENING TO KOREA

28-3 turned out to be a rather good day for many people. VK5LP heard JA1TGS on 52.050 at S3 at 2255Z, and that's mighty early for a JA to be heard in VK5. KG6DX next was monitored on 50.110 to S9 at 0030Z, and shifting up to 52.050 at 0037Z, where he was worked in VK5 on CW. At 0055Z HL9TG was observed on the 6 metre net on 28885 kHz and given warning of possible improving conditions. The Vladivostok TV came up to S9+ soon after, to be joined a bit later by the Magadan TV station, both around 49.750 MHz. You can always tell when both stations are there by the beat note they produce. It looked good for KL7. At 0143Z JA8DXB was worked on CW on 52.028. At 0159Z JA7LDA 5 x 5 on SSB. It looked as though the conditions had swung away from a possible KL7 opening. At 0259Z Gary HL9TG was worked in VK5 by VK5KK, VK5ZJG, VK5LP, VK5ZMO and VK5SV. Mark VK5AVQ heard Gary whilst mobile in Adelaide using his ¼ wave whip, but was unable to make a contact (news came back to us from interstate that a two-way contact had eventuated with the mobile, but this is not correct). Mark rushed to his home QTH and worked HL9TG from there. Signals were 5 x 9 most of the time. We also know VK2 BYX and VK4DO worked him and VK3OT had a CW contact. David VK5KK also worked HL9WI Bill around 0320, but signals were not as strong as Gary. The irony of the matter is that I (VK5LP) asked Bill to shift up to 10 kHz for a contact, he moved up to 7 kHz and landed right into the lap of VK5KK. As soon as David had finished with Bill the band faded. Such is the luck of the game!

As these notes are being finished, news comes to hand that today, 29-3, VK6ZKO worked HL9TG, but no other VK6s despite the VK6RTV Perth beacon being S9+. Also VK4PU worked WB6NMT and WA6TFS. And VK5ZMO received a 625 line test pattern from a possible Indonesian video signal on 48.25 MHz. ZLs worked into W also, around 2200Z. And so the saga goes on.

I must close now, as I have to catch today's mail. Thought for the month: "Strange how much you've got to know before you know how little you know."

73, The Voice in the Hills. ■

STOP PRESS

Chris VK5MC worked Peter ZE5JJ on 432 MHz via EME at 0930Z on 31-3-79. In reports exchanged sigs. 2-3 dB above noise with a peak of 6 dB. Chris using a 20 ft. dish and Peter a 30 ft. dish.

On 3rd April VK5KK and VK3OT are believed to have worked XE1GE.

Also on 3rd April VK3s and VK2s worked KH6NS, HL9WI and JAs.

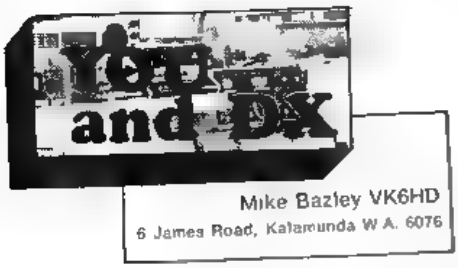
W6QZ Loren Windom will call VK on 52.050 from 2300Z to 0300Z Saturday USA, and VK Sunday morning, calling on the hour and half hour. Call for two minutes then listen for two minutes for 10-15 minutes. Loren, in Columbus Ohio, runs a kilowatt and a large rhombic on Australia.

WANTED

The Project ASERT Committee of the WIA is anxious to obtain a number of Rustrak miniature recorders, preferably having a range 0-1 mA and a chart speed of 5 cm/hour.

If any member or other person reading this advertisement is prepared to donate or sell a recorder of this type, the ASERT Committee would be most grateful.

Please have a look in your junk box and see what you can find; then either write to Box 150, Toorak, Vic. 3142, or telephone Les James (03) [redacted] A.H.



Mike Bazley VK6HD
6 James Road, Kalamunda W.A. 6076

The following is taken from the West Gulf DX Bulletin. I think it is of interest

THE RUSSIAN WOODPECKER

If you have not heard this one, you have not been on the air in the last year or two. Like a lot of other things you try to live with it and wish it would go away but it seldom does. Maybe if you know a bit more it might help to tolerate the continuing burden. The following information compiled by W3

The "woodpecker" is a long range radar and the range can be estimated by noticing that the repetition corresponds to 25 w.p.m. CW dots. At this speed, the time from dot to dot is 96 milliseconds and this means that the radar range is roughly 47,000,000 feet or 8,950 miles. This "on-the-air" estimate was done without instruments so it is probably a bit in error. If the actual design range was 15,000 km or 9,320 miles, the error in the estimate would only be 4 per cent.

Presuming a 10 megawatt source and 16 dBi antenna gain, the ERP is 88 dBw. However, if you figure 20 metres at 1,000 miles, this immense signal is reduced by path loss to a mere 0.0005 watt.

This might make some think that a 1 watt jammer would have an advantage over the woodpecker of over 1,000:1 but this is not correct. Not all of a jamming signal will be effective unless it is able to pass through the IF and video filters of the radar. A constant carrier is not effective at all because it is rejected as a DC level by the AC coupled video circuitry of the radar.

However CW dots will get through, this assuming a rise time of 1 millisecond for amateur CW and an additional 20 dB advantage is given back to the radar because of the mismatch in rise time, video bandwidth and corner frequency. Notice that the CW dot jammer, even if only 1 watt, still has a 10 to 1 advantage. I might even be that a 100 watts or 1 kW would be even better.

There is some reason to believe that the above is true. For one thing the woodpecker is only heard on the phone bands where voice envelopes can be rejected by the radar video circuit. Also, when someone is sending CW dots at 25 w.p.m. the woodpecker usually QSYs within five minutes.

Some who have studied the situation have noted that persistent CW sending on the woodpecker frequency has had them go QRT, one instance it lasting for about three weeks returning with a new gimmick. The woodpecker showed with a frequency hopping mode. If problems developed, the woodpecker would hop to some other frequency on the amateur band.

However, the woodpecker must have an IF bandwidth of 20 kHz in order to process the 100 microsecond pulses that they transmit and thus there are not many such hops possible within one ham band. Observation tends to reinforce this thinking, only about eight operators sending dots at 25 w.p.m. spaced 20 to 30 kHz across a band would eliminate the advantage gained by the frequency-hopping technique.

(See also the report in April AR.—Ed.)

This writer suggests that perhaps you might feel like calling H5HHH on the off chance you may work an H5! On the other hand it will improve your CW and get rid of some QRM.

A letter from PA0DLM, which arrived too late for the April issue, stated that a special station would be active on all HF bands from 2100Z April 29 to 2100Z April 30. The station would be commemorating the 400th year of the "State of the Netherlands". A special QSL would be available to all those sending a QSL (via the bureau is acceptable). So if you worked this one then you now know what it was all about!

Another piece of history in that KP4AM/D (Desecheo) finally showed on the band during March (QSL via W6WX) and I trust that those who chase DX made it and were in the same position as this writer who was doing antenna changeover and maintenance at the time!

The 3X1IX reported previously has been heard again, with the still monster pile up, beam heading is OK so this could be the genuine article. No QSL information to hand at present.

Rumour has it that OZ1CRH has obtained a licence to operate from YA. No call sign as yet but it is believed that operation could commence in April or May.

One of my other hobbies is stamp collecting. What has this to do with radio? Well in a recent issue of "Stamp News" there was reference to the country of Redonda, an island adjacent to Antigua, which was in process of issuing its first stamps. It would appear that Redonda is a separate nation with its own King!!! A new DXCC country in the offing???

Apologies to all for not giving advance information of the Spratly and Franz Joseph Land DX-peditions. To be of value information has to be received here 6 weeks before DXpedition date. Often one only hears of an impeding DXpedition 2 or 3 weeks prior to the operation. If anyone is interested and would like to let me have, say, five stamped addressed envelopes, together with a wanted list, I will try to forward brief details of any DXpeditions that come to hand. Those details that arrive too late for publication of course (I hope this offer does not get out of hand!)

FROM THE WEST GULF DX BULLETIN

HV3SJ usual operator, Brother Ed, has been transferred to HK land. This leaves the Vatican without a regular amateur operator. ZD9GH shows nearly every Monday on 14250 kHz from 2100Z and on Saturdays from 2000Z. VP8SO South Orkneys on most days 14275 kHz from 2000Z. No more amateur radio is being allowed from the Comoros and D68AD has had his licence cancelled.

FROM OUR READERS!

It would appear that there is a demand for an expanded QSL section judging by comments received. This has been greatly expanded this month. If you don't agree then let me know. JA0CUV/1 was heard taking a list (JAs only) for 3V8BZ, LU3ZY (South Sandwich) heard on CW 14023 kHz at 0145Z. S8AAA heard on 14 CW at 1740Z (for those of you that burn the midnight oil). 9J2WR is back in the UK, signing GD3AHV, and still has his 9J2 logs. If anyone still needs a QSL, Corlea Bungalow, Ronague Road, Ballasalla, IOM, will find him. The information contained in the letters received highlights the differing DX conditions between East and West. Boy those South Americans are like "hen's teeth" over here in the West!

QTHs YOU MAY HAVE MISSED

A4XHI — Box 6530, Saladah, South Oman.
AP2UR — via W8QFR.
FB8XS, FB8XV — via F5VU/C.
FM7WO — Box 287, Fort de France.
FW0TT — via 424TT (SAE and IRCs required).
FY7YE — via W5JLU.
HD1A — via WA4QMQ.
H18MOG — via W3SNK.
HZ1MJ — via WA6LFF.
J28AG — SP 85038 CT Djibouti.
J28AG — SP 85038 C. T Djibouti.
J28AY — via F6ETO.
WD8JTC/KH2 — via KG6, Guam Buro.
KH6JHJ/KH4 — via KM6BI.
KP4AM/D — via W6WX.
P29BL Box 7412, Boroko, PNG.
P29EJ — Box 1486, Lae, PNG.
T2T — via W5RBO.
TA1ZB — via VK4LG.
TF5TP — via DL7MQ.
VK2DCA/VK9 via BH9AAA.
VK0JC — via OZ8AE.
VP2DXD — via WB8LDH.
VQ9KK — via WA3HUP.
VQ9MR — via N5GU.
VR3AH — via WB4PRU.
YS10 — via W2KF.
ZF2CI — via WA6AHF.
ZK1BD — via ZL1SZ.
ZL5MC — via ZL2HE.
3B9ZZ — via W2GHK.
3D6AF — via —A0CUV/1
3D6BT — via ZS2SA
SM2ALH/4U — via SM Buro (counts as SU).
VE3BWK/4U — via WA3HUP (counts as YK)
6W8DY via VE4SK.
6Y5DA via VE4JK.

FROM THE FIJI ASSOCIATION OF RADIO AMATEURS (FARA)

In a letter to the Editor dated 24-3-79, Upali 3D2UP advises us as follows:—

The FARA at its meeting held on 30th January, 1979, resolved to inform the WIA that:—

(a) The Association was re-activated at a meeting held on 27th November, 1978, and the office-bearers for the years 1979 are as follows: President, R. L. (Dick) Northcott 3D2CM, Joint Secretaries, Upali Ranasinghe 3D2UP, Bernard Malandain 3D2BM, Treasurer cum QSL Manager, Raj Singh 3D2ER, Committee Members George Williams, Bob Hodkinson 3D2BH, and

(b) "Farapet" operates every Monday as follows: 07.30Z to 08.00Z, 14195 kHz, 08.00Z to 08.30Z, 3695 kHz.

Net will be operated and conducted by one of the licensed members of the Association and any of your members are welcome to join in the net.

We have 22 members of which 16 are licensed. —3D2UP

Many thanks to those who have taken the trouble to write in, especially VK4KX, VK4SS, VK6LK and L30042. Thanks are also due to the West Gulf DX Bulletin.

LETTER

The following is a letter received from John McKendrick LU8EB:

"I am taking this opportunity, whilst on holiday, to write back-logged QSLs and catch up general correspondence!

I would be very happy to provide all information for those seeking confirmation of LU8 Argentina. Every Monday and Friday VK3RK and I sked on 14300 kHz ± QRM at 1000 hours Z; other regular skeds are on Saturdays and Sundays, 21325 kHz ± QRM. In QSO with VP8QP, OJ, LJ6XE, W2HTI, VS6EK et al — we start at 1200 hours Z. **All** VKs and Pacific Reg on **very welcome.**

I would also be very happy to receive requests by mail to establish a time (Z please) and frequency for any enthusiast to confirm Argentina on 80-10. I am with facility for CW and SSB, using Heathkit 401, 301, SB220, also Kenwood 520S and Yaesu 2100B 3 element tribander for 20, 10, 10; ground plane, and long wire to back up from 80 right through. My direct mail address is:— Embajada de Australia, Ave Santa Fe 846, Capital Federal, Buenos Aires, Argentina. My Australian address for the forwarding of correspondence (approximately 2-3 weeks) is: J. McKendrick C/o 25 Turnbull Avenue, Toorak, Vic 3142.

Hopefully within the next few months I will receive confirmation of PORT OA4 (Lima, Peru) and CE3 (Sant., Chile). More news of that later!

All QSOs are confirmed by QSL cards — my QSL manager is K6EVQ — any takers for VK??? — It's quite a job!

73s, Yours faithfully,
John McKendrick LU8EBI, ASSWIA, ARRL."

QSL MANAGER

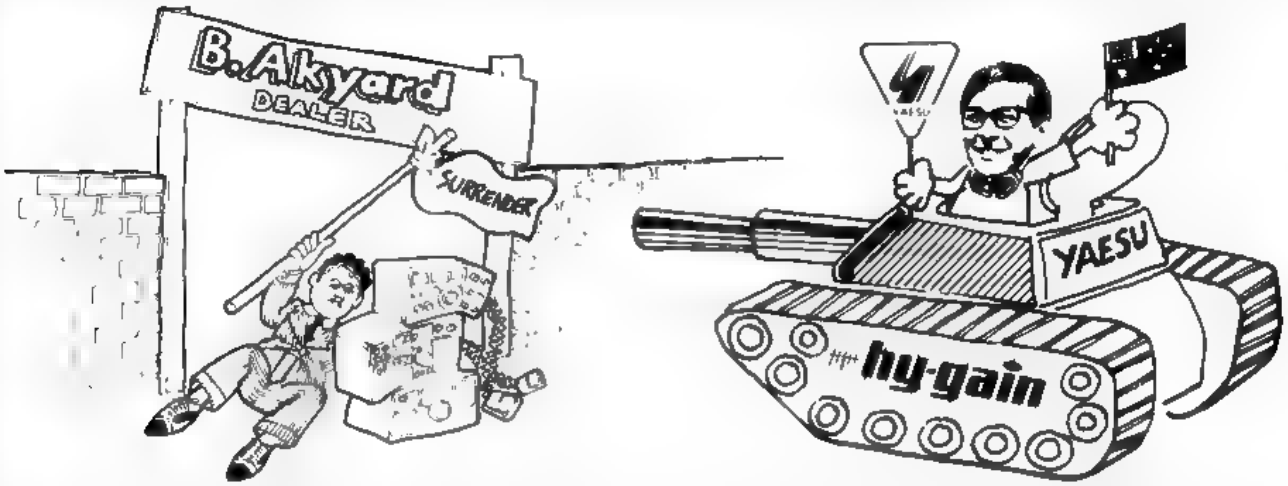
Tony De Prato WA4POH of 205 Cherokee Trail, Somerset, Kentucky 42501, USA, advises that he is the QSL Manager for the following stations:— UP8PU, UP8QG, UP8QJ, UP8NJ, ZS1DM and KG4DS. ■

TRIAL AOCP EXAM

TRIAL AOCP EXAM — IN JULY, MULTIPLE CHOICE TYPE, CLUBS OR DIVISIONS. CONTACT ROY HARTKOPF VK3AOH, FOR DETAILS.

THE WAR CONTINUES

THE BATTLE STILL RAGES WITH YAESU — NOW HY-GAIN ANTENNAS HAVE FALLEN TOO!



You must have heard about the Yaesu price war – Dick Smith will better any genuine price offered by anyone on Yaesu products . . . We've received such a tremendous response from the Amateurs of Australia that we've decided to reduce the price of Hy-gain HF antennas. So now you can buy your complete amateur station from Dick at a real bargain price.

YOU REAP THE BENEFIT!

And you'll be buying from a fully Australian owned company – your one stop electronics shop who actively supports amateur radio!

HERE ARE OUR YAESU PRICES: (and we'll send them anywhere in Australia for just $6.00 extra - We even lose money on this 'below cost' freight offer!)

FT-101E 80-10m HF transceiver	Cat D-2860	$789.00	FT-101Z New HF transceiver	Cat D-2862	$775.00
FT-301 Solid State HF transceiver	Cat D-2870	$795.00	FT-901D Top class HF transceiver	Cat D-2854	$1349.00
FT-7 Mobile HF transceiver	Cat D-2866	$375.00	FT-227RA 2m FM scanning transc	Cat D-2891	$379.00
FT-227 2m FM transc with memory	Cat D-2890	$379.00	CPU-2500 computerised 2m transc	Cat D-2889	$549.00
FC-301 Antenna tuning unit	Cat D-2896	$219.00	FC-901 antenna tuning unit	Cat. D-2855	$249.00
FL-2100B 1 2kW linear amplifier	Cat D-2546	$529.00	FL-110 200W linear amplifier	Cat D-2884	$189.00
FRG-7 Solid State HF Rcvr	Cat D-2850	$319.00	FRG-7000 Digital HF rcvr	Cat D-2848	$599.00
FP-301 13.8V/20A supply	Cat D-2872	$169.00	YC-500S 500MHz Freq. Counter	Cat D-2892	$475.00

We believe that the prices above are better than any supplier in Australia. If you find someone cheaper for the same goods, tell us! For us to better any price, simply show us the advertisment from any Australian company. After checking that they have stocks available at that price we will sell it for a lower price. Offer remains open while present stocks last (approx. $250,000 worth).

Easy terms available to approved personal applicants on any item priced at $111.00 or more.

NEW HY-GAIN HF ANTENNA PRICES:

SUPER SPECIAL:
TH6 DXX SLASHED BY $104.00 TO ONLY
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NATIONAL RJX-1011

A Unique New SSB/CW Transceiver For Amateur Communications

There is no substitute for quality, performance or the satisfaction of owning the very best.
Hence the incomparable National RJX-1011 amateur transceiver. The RJX-1011 covers all amateur bands 1.8-30 MHz (160-10 metres). It utilizes advanced Phase-Lock-Loop circuitry with dual gate MOS FETs at all critical RF amplifier and mixer stages. There's a rotating dial for easy band-scanning and an electronic frequency counter with digital readout and a memory display that remembers frequencies at the flip of a switch. And that's just the beginning.
Matching speaker unit RJX-S1011 and complete external VFO RJX-V1011 also available.
For further information and specifications write, phone or call in.

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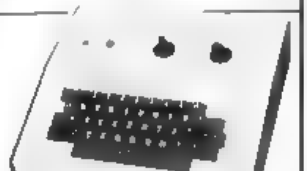
CONVERT MORSE, RTTY AND ASCII TO VIDEO

MODEL 200 TRI-MODE CONVERTOR

Based on the powerful F-8 Microprocessor system this new product from Info-Tech advanced technology is an addition to the popular Mode 100.

$668



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New Model 150 RTTY KEYBOARD

Features: 4 speeds (60, 66, 75, 100 wpm), built-in AFSK with 3 shifts (170, 425, 850 Hz), automatic CR & LF at end of 64 or 72 character line, built-in low shift CW ID provision.

INFO-TECH MODEL 30 MORSE TO VIDEO CONVERTER

$429

Converts received Morse code from your receiver to a video printout on your TV, no other devices required

Features

● No critical adjustments ● Attaches to any CW receiver with BFO and 3 to 600 ohm audio ● Simple LED tuning indicator ● Unique PLL front end input filter for superior selectivity ● Automatic speed and weight adjustment tracks 8 to 150 wpm ● Simple connection to your TV set's video amp for excellent clarity ● Prints 8 lines, for a total of 256 characters ● Text shifts upwards as message continues with automatic carriage return and line feed (Scrolling) ● Will accept parallel ASCII with strobe for micro computer applications ● Built-in AC power supply

ALSO AVAILABLE

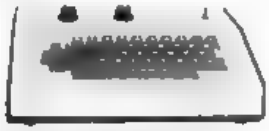
INFO-TECH MODEL 10-D CW KEYBOARD **$399**

MULTI PALM II 2M/FM POCKET TRANSCEIVER

Transceive frequency range 2 MHz in 144-148 MHz transceive channels 6, channels antenna impedance 50 ohms unbalanced, BNC connector power requirement 12V DC (negative grounded). Power consumption transmit 300 mA receive 100 mA stand-by 25 mA size 68 mm (2-43/64 in.) wide, 154 mm (6-1/16 in.) high, 41.5 mm (1-41/64 in. deep, weight 470g (1.03 lbs.) Repeater offset ±600 kHz modulation variable reactance phase modulation, max deviation ±5 kHz microphone condenser microphone receiver double conversion superheterodyne (1st IF 16.9 MHz, 2nd IF, 455 kHz) Sensitivity 4 dBu NQ 20dB) Audio output maximum 0.3 watts. Attachment rubber ducky antenna Nicad battery pack, DC cable with cigarette lighter plug Carrying strap

$229

INFO-TECH M-300 TRI-MODE KEYBOARD

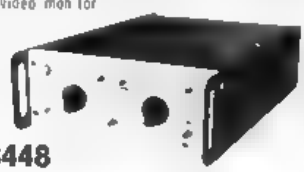


A microprocessor controlled keyboard that generates Morse, RTTY and ASCII. Write or call for further specifications.

$564

New Model 75 RTTY TO VIDEO CONVERTER

Features 4 speeds (60, 66, 75, 100 wpm), built-in TU with 3 shifts (170, 425, 850 Hz), 32 character x 16 line video output with scrolling, connects directly to receiver audio and video monitor



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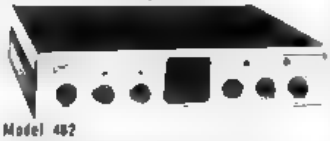
RTTY for ALL Systems



Model 402

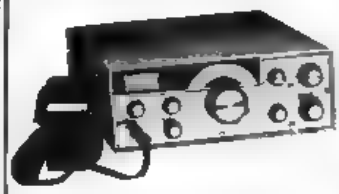
ELECTROCOM "SERIES 400" FREQUENCY SHIFT CONVERTERS

Professionally engineered for outstanding performance, stability and reliability the Electrocom Models 400 and 402 add new dimensions of compatibility between radio and teletypewriter systems. Manufactured to highest quality standards an Electrocom tradition for nearly two decades — these units are ideal for military, government, commercial civil defence and amateur applications. The Model 400 front panel digital knob accurately selects shifts up to 1000 Hz while two such knobs on the Model 402 independently set the mark and space frequencies. Both models may also be preset with any tone pair between 1000 and 3200 Hz

Optimum performance with FSK or AFSK systems is assured by matched filters, precision linear detectors, baud rate selector bias compensation and semi-diversity circuitry. Operation is enhanced by a CRT monitor autostart with solid-state motor switching, antispace, markhold, EIA/MIL output voltages, and a constant current loop supply. In addition, various options are available including rack mounting and polar current output.

Write or call us for complete product details and specifications.

alda 103

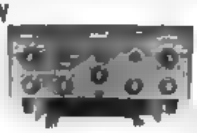


3¼" H x 9 W x 12½" D

totally solid state SSB Transceiver 80 through 20 metres

250 WATTS FOR ONLY $495

AMATEUR TELEVISION IS EASY WITH THE NEW ROBOT SCAN CONVERTOR MODEL 400



● All solid state random access memory ● Slow-to-fast and fast-to-slow conversion capability ● SSTV picture display on any standard CCTV monitor ● Frame freeze from any standard CCTV camera, broadcast video or video tape source ● Permanent picture storage ● Automatic or manual TV frame snatch ● Internal grey scale generator adjustment standard ● Capable of real time display of digitally processed fast scan video.

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FDK BIGEAR TRANSCEIVER TYPE 1

2m FM SSB CW PLL SYNTHESIZED MOBILE

● 144-148 MHz, PLL digital synthesizer system, FM: 800 channels (5 kHz step), SSB 400 channels (10 kHz step), plus VXO system (±7 kHz) ● AC 117/240V, DC 13.8V, two-step power supply ● Digital display system (using a large-sized LED), providing reading up to six figures ● Transmitting output 10W 1W, shifting mechanism ● Front loudspeaker suited for base station ● Easy-reading, separate S/RF centre meter ● ON AIR RECEIVE/RIT position displayed by LED ● Include RIT, AGC, VOX and noise blanker circuit ● Provides repeater operation of ± 600 kHz and ±1 MHz

$694

ATLAS 215X-HF Transceiver $795

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RJX-1011 Transceiver	$1 990
RJX-S1011 Speaker Unit	POA
RJX-V1011 VFO Unit	POA
RF4800 DR48 Receiver	$466
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FT101E Transceiver	$779
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FT301D Transceiver	$950
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FRG-7 Receiver	$315
FV-301 External VFO	$.39
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HF3-100L2 Linear Amplifier	$225
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KENWOOD PRODUCTS	POA
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SY-2 3-el on 20, 15 & 10m	$269
4-BTV w/80m Resonator (10-80m vertical)	$135
ELCETROCOM	
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INFO TECH	
Model 75 RTTY to Video Converter	$448
Mode 150 RTTY Keyboard	$407
M-200E Morse, RTTY & ASCII to Video Converter	$668
M 300 Morse, RTTY & ASCII Keyboard	$564
ROBOT	
Scan Converter	$898
12 in Video Monitor AVM-090	$289
ASA 500 Video Camera	$270
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SX 59 RF Pre-amplifier	$86
SX-1 Pre-selector	$63
DX 5550 Counter Generator w/Prescaler	$220
KX 1 Coupler	$56
MX-1D Marker	$69
OSKERBLOCK	
SWR 300 Power Meter	$111
SWR-200B Power Meter	$84
Couplers 6m and 2m	$30
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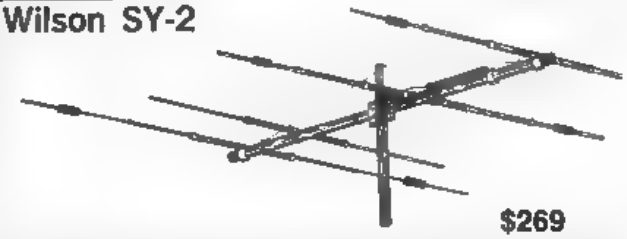
Commander FJ400 Rotator	$117
Rotator Power Supply	$22
Mast Clamps	$11 (set x 2)
8-core Rotator Cable	$1 00m
Coaxial Cable RG 8/U Low Loss	$. 30m

Wilson SY-2



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Delivers outstanding performance on 20, 15 and 10 metres. Features Wilson's large diameter High-Q Traps, feeds with 52 ohms coax, a beta match method presents tapered impedance which provides most efficient 3 band matching and DC ground to eliminate precipitation static. The result is SWR less than 1.5 to 1 at resonance on all bands and maximum front-to-back. An added feature is the separate 10 metre reflector for correct monoband spacing. Add to this the rugged boom to element mounting, heavy duty taper swaged elements

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WRITE, PHONE OR CALL IN!

DTR 2000L DENTRON

$1459

Compatible with most exciters, the DTR-2000L was designed within a series of Amateur amplifiers spawned by the MLA-2500. These amplifiers have been tested and proven in every imaginable situation folks could put them through from rare DXpeditions to medical research labs. Not to mention ham shacks the world over.

The DTR-2000L will cover most MARS frequencies just outside the Amateur Bands (With proper coil top changes and band switch modification the unit will also cover the 10 metre amateur band.)

● Modes: USB, LSB, CW, RTTY, SSTV ● Power Requirements 234/117V AC 50/60 Hz ● RF Drive Power: 125 Watts maximum and 65 Watts RMS minimum for 1 kW DC input ● Frequency range 1.8-30 MHz ● DC Plate Voltage SSB (idle + 2600V approximate) CW (idle + 1800V approximate) ● Duty Cycle: 100% at full power ● Input Impedance 50 ohms nominal + Input VSWR: 1.5 to 1 average ● Output Impedance: 50 ohms nominal ● Antenna load VSWR 3 to 1 maximum ● ALC negative going, adjustable from rear panel ● Spurious Emissions: MD, greater than 30 dB down Harmonics, greater than than 40 dB down ● FCC Type Accepted ● Size H. 7¼ in. x W 14½ in x D. 14½ in ● Weight (including 8877) 54 pounds ● Packaged in 5/8 in hardwood crate

MT-3000A DENTRON

$447

Specifications:

● Power handling capability in excess of 3 kW PEP ● Front panel antenna switch with 5 antenna plus tuner bypass position ● Built-in 50 Ohm 250 Watt dummy load ● Dual Wattmeters ● Compact 5½ in x 14 in. x 14 in. 18 pounds ● Continuous tuning 160-10 metres ● 3 core heavy duty balun

LUNAR ELECTRONICS MODEL HF3-100L 2 DUAL POWER BI-LINEARIZED VHF AMPLIFIER

● Full 80-10m broadband coverage ● 'Full' 100 watts output AM (150-200 watts PEP on SSB ● Dual power: Selectables 5/10 watt input power ● Operating modes: AM, FM, CW, SSB RTTY, SSTV ● Broadband — requires no tuning across band ● Harmonic levels typically -50 dB or better (see specifications) ● RF actuated switching relays ● Full VSWR and reverse voltage protection ● Extra stabilization circuitry ensures spurious-free operation at all input power levels ● Under 1 dB insertion loss in receive or bypass mode ● Remote control capability ● Receive pre-amp nominal 18 dB gain across band.

$225

LUNAR ELECTRONICS 28-432 LOW NOISE FIGURE RX PREAMPLIFIERS AVAILABLE

"DEDICATED TO MAKING AMATEUR RADIO MORE FUN"

MLA-2500B DENTRON

$1199

● 160 through 10 metres ● 2000 + watts PEP input on SSB ● 1000 watts DC input on CW, RTTY or SSTV Continuous Duty ● Variable forced air cooling system ● Self contained continuous duty power supply ● Two EIMAC 8875 external-anode ceramic/metal triodes operating in grounded grid ● Harmonic Suppression better than 50 dB ● Built-in ALC ● Built-in RF Wattmeter ● 117V or 234V AC, 50-60 Hz ● Third order distortion down at least 30 dB ● Frequency Range 1.8 MHz (1.8-2.5), 3.5 MHz (3.4-4.5), 7 MHz (6.0-9.0), 14 MHz (11.0-15.0), 21 MHz (16.0-22.0), 28 MHz (28.0-30.0) ● 40 watts drive for 1 kW DC input ● Size: 5¼ in. H x 14 in. W x 14 in. D. ● Weight: 47 lbs.

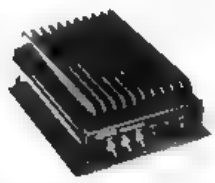
MT-2000A DENTRON

$270

Specifications:

● Continuous Tuning 1.8 to 30 MHz ● Styled to match the MLA-2500 and upcoming DenTron Transceiver, Receivers and Transmitters ● Front Panel grounding switch for your antenna system ● Antenna inputs Coax unbalanced, SO-239 Random Wire, ceramic feedthrough, Balanced line, two ceramic feedthroughs, tuned feeders 75-600 ohms ● Handles a full 3 kW PEP ● Built-in heavy duty 4 to 1 balun, 3 cores ● Ceramic rotary switch 18 position, 12 amp capacity ● Capacitor Spacing 6000V ● low profile styling 5¼ in. x 14 in. x 14 in. ● Weight 16 lbs.

LUNAR ELECTRONICS BI-LINEAR VHF AMPLIFIERS



Model, Frequency 6M3-50P, 50 MHz, 6M10-120P, 50 MHz; 2M10-80P, 144 MHz, 2M25-150P, 144 MHz; 2M30-160P, 144 MHz

Linearized — accepts all modes.

● Low power input yields nom 9-10 dB gain ● Covers entire amateur band w/o tuning ● Built-in receive pre-amplifier ● Automatic T-R switching ● ICAS ratings apply ● Exceeds FCC R & O 20777 requirements of -60 dB ● Variable T-R delay for SSB/CW use ● Pre-amp and power amp independently controllable ● Pre-amp nom 9 dB gain 2½ dB overall NF ● Functionally designed package including mounting tip ● One year warranty — 90 days on power transistors ● Models available for the 143-174 MHz bands, 5 MHz segments ● Other models, including 432 MHz band, coming soon.

ANTENNA ROTATOR

Medium-sized Ham Antenna Rotator FU 400. Constructed for long trouble free operation, 200 kg vertical weight capacity Extra heavy duty disc brake that prevent windmilling.

$117

Approved Power Supply **$11**

Additional Mast Clamps

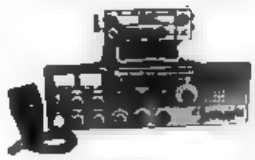
DENTRON CLIPPERTON-L

$879

Clipperton-L delivers 2000 watts PEP input [illegible] watts DC input on CW, RTTY or SSTV; all continuous duty. All good reasons to take a Clipperton-L along on your next adventure!

● New Feature HI-LO power switching ● 160 through 15 metres 10 metres ● 2000 watts PEP input on SSB ● 1000 watts DC input on CW, RTTY or SSTV ● Forced air cooling ● Self-contained continuous duty power supply 2500V idle SSB 1800V idle CW approx. ● 4-572 B Triodes operating in grounded grid ● 50 ohm input impedance unbalanced at better than 1.5 to 1V SWR ● 50 ohm output impedance ● Harmonic Suppression meets or exceeds FCC requirements ● Built-in ALC (adjustable) ● Easy changed 117V or 234V AC 50-60 Hz ● Meter (illuminated) for plate voltage or plate current ● Size 6 in. H. x 14½ in. W x 14½ in D. ● Weight 42 lbs

FDX BIGEAR TRANSCEIVER Type2



2m FM PLL SYNTHESIZED MOBILE TRANSCEIVER

● 144-148 MHz. PLL digital synthesizer system (800 channels) ● A large-sized LED, digital display system provides readings up to six figures ● Easy-operating separate and selective mechanism displayed by the frequency unit for wider operation ● Transmitting output: 25W/1W, two-step selector switch ● Provides repeater operation of ± 600 kHz and desired frequency ● RF output with S meter indicator

$375

MIZUHO RF PREAMPLIFIERS FOR [illegible] MHz BAND

MODEL SX-28 FOR USE WITH TRANSCEIVERS

Specifications:

Frequency range 3.30 MHz in 3 bands; 3-7, 7-14, 14-30 MHz ● Gain 20 dB nom. (at 7 MHz), front panel variable control ● Attenuator, 20 dB attenuation selectable from front panel control ● Imped. 50 or 75 ohm systems, UHF connectors on rear panel

MIZUHO DX-555D COUNTER-GENERATOR

NEW Counter-Generator

Two vital pieces of test equipment in one

Counter: 5 digit display, 7 digit readout capability 10 Hz to over 230 MHz Input level 20m Vrms to 5 Vrms (Prescaler 200m Vrms to 2 Vrms). Base oscillator beats directly against WWV

Generator: 440 kHz to 30 MHz in 3 ranges. Output displayed on counter and available at jack on rear panel 600 Hz modulation for AM receivers.

DENTRON GLA-1000 1 kW AMPLIFIER

Specifications

● Size 5-3/8 in. H., 11 in. W., 11 in. D. ● Weight 24 lbs. ● Electrical Power Consumption 117V AC 50/60 Hz 12.5 amps, factory fused at 15 amps, 234V AC 50/60 Hz 7 amps; recommended fuse 10 amps ● Frequency Coverage 80 metres (3.45 to 4.3 MHz; 40 metres, 6.950 to 7.5 MHz; 20 metres 13.950 to 14.5 MHz; 15 metres, 20.950 to 21.350 MHz 10 metres, 28 to 30 MHz ● RF Drive Max 135W for 1 kW input ● DC input 1 kW CW, 1200W PEP SSB ● Input Impedance 50 ohms 1.5 1 VSWR APX ● Spurious Emissions Ind better than 30 dB harmonics down better than 40 dB ● Components 4 — 8950-A tubes; 6 — Diodes ● FCC type accepted

$1199

DENTRON JR MONITOR

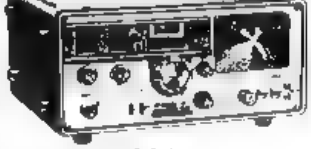
$104

Call it what you will: antenna tuner transmatch matchbox or matching network the JR MONITOR has it all wrapped up in one neat 5¼ in W x 2¾ in. H x 6 in D all metal cabinet

Specifications

● Continuous tuning 1.8-30 MHz ● Forward reading relative output power meter ● 300 watt power capability ● Built-in encapsulated balun ● Mobile mounting bracket ● Ceramic Rotary Switch 12-position ● Capacitor spacing 1000 volts ● Antenna inputs (a) Coax unbalanced 50 239 (b) Random wire (c) Balanced feed line 75-600 ohm ● 5¼ in. W x 2¾ in. H x 6 in. D ● All metal black wrinkle finish cabinet ● Weight 2½ lbs

FRG-7 GENERAL COVERAGE COMMUNICATIONS RX



$315

FRG-7000 GENERAL COVERAGE DIGITAL COMMUNICATIONS RX

$595

DR-48 AM-SSB-FM GENERAL COVERAGE RECEIVER

$476

WRITE FOR OUR LATEST HAM-RADIO EQUIPMENT CATALOGUE

CONTESTS

Wally Watkins VK2ZNW/NCU
Box 1065, Orange 2800

May

12/13 (2100Z-2100Z) USSR CO-M CONTEST ALL BAND RS(T) + QSO NR

19/26 MICHIGAN ACHIEVEMENT AWARD AND QSO PARTY

26/27 (0000Z-2400Z CQ WPX CW CONTEST RULES, JAN CW MAG

June.

1/4 (2300Z-0600Z) CERTIFICATE HUNTERS' CLUB QSO PARTY
Details Allen VK2AIR, QTHR, SASE PSE

16/17 ALL ASIAN PHONE CONTEST

23/24 ARRL FIELD DAY

July:

14-15 IARU RADIOSPORT CHAMPIONSHIPS

MICHIGAN AWARD & QSO PARTY

DX stations work at least one Michigan station. Submit log information, including name and address of station worked and relate a fact about Michigan given by the station worked. Send to Governor William Milliken, Lansing, Michigan 48902, no later than July 1. QSO part 19-21

THE OOPS I REALLY GOOFED IT DEPARTMENT

The 1978 Remembrance Day results. Please change
VK5 Open — VK5ALC to VK5NLC
VK6HK from Phone to Open
VK3 Phone — VK3AVQ to VK3ALQ
Add to VK2 Phone VK2BMX 325
My apologies to all concerned

John Moyle National Field Day results will be published next month along with the latest points for the contest championship trophy.

A thought to those running classes for an amateur examination. During the doldrums between exam and results keep the class together by giving instruction in operating a station and how to join in contests and how to keep a tidy and well presented log!

6 METRE SMIRK PARTY CONTEST

With the excellent showing put up by 6 metres so far the annual SMIRK Party Contest could bring some six metre operators out of the woodwork.

Whilst the contest award winners must be a SMIRK member, the contest provides non-members a chance to contact SMIRK members and may provide some with the incentive to become a SMIRK member.

The aim of the contest is to promote world-wide six metre operation.

The contest takes place on the 2nd June and runs from 0000 GMT to 2400 GMT.

Contacts by members with non-members count 1 point.

Contacts between SMIRK members count 2 points each.

The score obtained is the total number of points multiplied by the number of countries, US states and Canadian provinces worked.

The contest exchange information is. Call sign, country or US state or Canadian province. SMIRK number.

Log sheets and rules as well as SMIRK information may be obtained by an SASE to Ray Clark K5ZMS, 7158 Stone Fence Drive, San Antonio, Texas 78227.

If you have worked three SMIRK members already you can obtain a SMIRK number by sending $US4 to Ray Clark at the above address enclosing log details and SMIRK numbers of the stations worked.

An opening to Japan, the Pacific, or the USA would really make this contest an exciting event. ■

Bob Arnold VK3ZBB

[redacted]

Date	OSCAR 8			RUSSIAN RS.1		
	Orb. No.	Eqx Z	Eqx °W	Orb. No.	Eqx Z	Eqx °W
1	6310	0136	68	2606	0135	224
2	6324	0141	69	2618	0139	227
3	6337	0003	45	2630	0144	230
4	6351	0009	46	2642	0149	233
5	6365	0014	48	2654	0153	235
6	6379	0019	49	2666	0158	238
7	6393	0024	50	2677	0002	210
8	6407	0029	52	2689	0007	213
9	6421	0034	53	2701	0012	216
10	6435	0040	54	2713	0017	219
11	6449	0045	55	2725	0021	221
12	6463	0050	57	2737	0026	224
13	6477	0055	58	2749	0031	227
14	6491	0100	59	2761	0035	230
15	6506	0106	61	2773	0040	232
16	6519	0111	62	2785	0045	235
17	6533	0116	63	2797	0050	238
18	6547	0121	65	2809	0054	240
19	6561	0126	66	2821	0059	243
20	6575	0131	67	2833	0104	246
21	6589	0137	69	2845	0108	249
22	6603	0142	70	2857	0113	251
23	6616	0004	45	2869	0118	254
24	6630	0009	47	2881	0122	257
25	6644	0014	48	2893	0127	260
26	6658	0019	49	2905	0132	263
27	6672	0024	51	2917	0137	265
28	6686	0030	52	2929	0141	268
29	6700	0035	53	2941	0146	270
30	6714	0040	55	2953	0151	273

RS.2 is 40 min. after RS.1

WICEN

Ron Henderson VK1RH
Federal WICEN Co-ordinator,
53 Hannaford St, Page ACT 2614
Ph (062) 54 2059, A.H

"WICEN" EXERCISE AIDS CANOE CLUB

On Saturday, 17th February, 1979, the WICEN Group of the Summerland Amateur Radio Club assisted the Nymboida Canoe Trust to conduct its world class wild water races at Nymboida. The WICEN (Wireless Institute Civil Emergency Net) operated a safety and surveillance radio net over the 3 km down river race course. Seven members operated a net control station at the powerhouse and two sub-stations with a portable link downstream. Two VHF frequencies were used and a HF link was established to Interstate operators.

The net provided a safety and control function for the organisers to monitor the progress of over 40 competitors and to quickly locate those who had mishaps or went missing. For the operators, the exercise provided training in net operation and message procedure, the accuracy and speed of which is essential in emergency situations. WICEN operators and their equipment are available for emergency service at the request of authorities such as police or SES. Summerland WICEN operators participated in the recent National Disaster Organisation's Australia-wide communications exercise. More WICEN operators are needed and any interested licensed amateur operator may contact Mr Leith Martin VK2EA (phone 21 3594) for details. The Summerland Amateur Radio Club is again conducting instructional classes for anyone interested in gaining an amateur licence. If interested, please contact Mr Bill Cross VK2BCW (phone 21 6001) after hours for details. The Club is currently working on new clubrooms at Goonellabah, and hopes to have the Club station VK2AGH operational soon. The Club also operates a repeater, VK2RIC, from near Lismore which gives VHF coverage from north of Brisbane, west to Tenterfield, south to Taree, and sometimes to Sydney or further, depending on weather conditions. (Information supplied by J Alcorn VK2ZNC/NSA Publicity Officer Summerland Radio Club.) ■

Awards column

Bill Verrall VK5WV
7 Lilac Ave. Flinders Park, SA

WAVKCA (VHF) AWARD

During March, I issued award No. 12 to VK2ZHF and I wish to congratulate John on a fine effort in obtaining confirmations for the required 22 QSOs on 52 MHz including VK0WW from Macquarie Island and VK9ZNG from Norfolk Island in 1975. Since this award was created, presumably in late 1972 the 12 awards have been issued to the following.—

No. 1	VK3AQR	1-1-73.
No. 2	VK3ZNJ	1-1-73
No 3	VK3ZGP	26-1-73.
No. 4	VK3AMK	22-2-73.
No 5	VK3AOT	4-3-73.
No. 6	VK5ZWW	18-4-73
No 7	VK3BFG/T	10-7-74.
No. 8	VK3ZAZ	29-7-74
No. 9	VK2HZ	17-4-76
No. 10	VK3KK	7-3-77
No. 11	VK2ZNS	17-12-78.
No 12	VK2ZHF	3-3-79.

It is significant to note that only 12 awards have been issued in six years and, except for No. 6, all have gone to VK2 and VK3. No VHF operators in the other VK call areas have been successful in obtaining this award

have come to the conclusion that other VHF operators are just not interested in this award because the rules are far too restrictive and the required VK0 and VK9 QSOs are now virtually impossible to obtain We have lost VK9 TPNG, our principal source of VK9 QSOs, now that country is independent and if there was any more activity from Macquarie Island, this would favour only VK2, VK3 and VK7 It is highly unlikely that there will ever be another VHF operator as keen as VK0WW on Macquarie Island It is now most difficult to even entice ham operators to come up on HF from Macquarie to satisfy world demand for this country

Furthermore there will be no activity from Heard Island in the foreseable future, so that rules out the possibility of a VK0 VHF QSO even for the VK6s

There are hundreds of VHF operators within our ranks who are just as keen as those who have been successful in obtaining the WAVKCA (VHF) Award but will never now be able to qualify for this award because of their locations and the lack of opportunity to work VK0 and VK9. In my case I could have qualified for this award back in the early sixties if it was not necessary to work VK0 However, have several 6 metre QSLs from JA and ZL!

I am unable to determine the reasons why the WIA should have created an award with such difficult and restrictive rules As there have been only 12 awards issued in six years, it is not worth retaining the WIA awards programme and in my opinion should be deleted. All ham operators throughout VK and its territories must have an even chance to qualify for all awards issued by the WIA

There are alternatives We could change the rules to allow operators from VK0, VK1 and VK4-9 a chance to qualify One idea is to include a rule that a total of four (say) confirmed QSOs are required from any VK0. VK8 and VK9 Then it would be possible to qualify with four confirmed VK8 QSOs. Another idea would be to introduce a point scoring system so that VK0 and VK9 would count for more points than any other VK call area.

Personally, I am in favour of deleting the WAVKCA (VHF) Award from the WIA awards programme The standard WAS/VHF award with its provision for endorsement for additional countries confirmed adequately covers all VHF operators in VK Are there any comments before I close off the records?


WORKED AUSTRALIAN STATE POLICE

AWARD

THE DEFENDANT PADDY N. TAKEDA ALIAS.. JA3BAX
IS HEREBY CHARGED that on the 27th day of Sept 1978 at NARA in the State of JAPAN , being a person qualified and holding an Amateur Radio Operators Certificate by having in his possesion a prescribed article, to wit, a Radio Transceiver, did knowingly operate such transceiver and made contact with members of Australian State Police Departments and informed the said Officers of his Station Call sign and necessary relevant particulars.

UPON RECEIPT of a written confession from the said JA3BAX it is judged that the Defendant is found GUILTY and is ordered by the undersigned Charter Members that the defendant be made to display this Award in a conspicuous place. to wit, the premises wherein the said transceiver is Licensed to operate

Given under our hand and seal this 7th day of Nov. 1978 at CASINO in the State of New South Wales, with the very best of 73's

Lance Ferris VK2NVI — Gerry D'Andrea VK6NDZ — Russell Ashdown VK2NUN

THIS AWARD SUPPORTS THE ANNUAL APPEAL OF THE CANCER SOCIETY OF AUSTRALIA

* 015

WASP (worked Australian State Police) Award

WORKED AUSTRALIAN STATE POLICE AWARD

The award is created to further goodwill and public relations between police amateur radio operators of the Australian States and amateur radio operators in all countries of the world

All profits from the award are forwarded to the Cancer Society of Australia and are channelled into cancer research.

TO QUALIFY

The award is known as "Worked Australian State Police Award" and is issued to any amateur radio operator who satisfies the following conditions.—

1. Contact with two different police officers in any of the Australian States by any mode on any amateur frequency. One of these contacts must be with a charter member

2. The contacts to be a minimum of 24 hours apart unless the police officers are residing in different States of Australia at the time of contact.

VERIFICATION

Verification is required for the stations worked in the way of submission of an accurate copy of the applicant's log particulars listing only the two qualifying stations worked.

SWLs

Short wave listeners are also invited to apply for the award.

APPLICATIONS

Applications should be addressed to WASP, PO Box 404, Casino, NSW 2470, Australia.

The award is attractively printed on high gloss white card with the background in light blue and letters and edging in dark blue with a buff surround. The awards were printed by Thomson's Printing, 401 Kiewa Street, Albury, NSW, and the result is a very high standard

A fee of $4 should accompany applications for this award. This covers the costs of the award, postage and handling charges. Part of this fee is distributed to the Cancer Society of Australia.

Good Hunting

THE SOVEREIGN HILL AWARD

A new award is offered to radio amateurs, on 10 metres. Called the "Sovereign Hill Award", it commemorates the foundation of the Sovereign Hill Historical Park in Ballarat, Victoria — VK3 — the scene of the great gold rush of the 1850s Sovereign Hill is a fully operational gold mining town; 66 acres of careful restoration

The award will be available from Saturday, 12th May, 1979. on which date the Sovereign Hill amateur radio station will commence transmissions from the grounds of Sovereign Hill

THE AWARD

This is a large — 305 mm x 210 mm — full colour, glossy, double-weight photograph of a scene in Sovereign Hill embossed

CONDITIONS

To obtain the award it is necessary to contact five of the award 'Charter' stations on 10 metres One of these contacts must be a local station which will be designated by the letter 'S' following the charter number All other stations outside Ballarat will have the letter "A" after their charter number As an example, the award could be won by contacting one "S" station and four other 'A' stations anywhere in the world. All amateur stations on obtaining the award, will be given an "A" number, which may be passed on to other amateurs desiring the award The requirement of one local "S" station remains. The cost of the award is $2 — two dollars — US, or equivalent which includes airmailing to the recipient.

FREQUENCIES AND TIMES

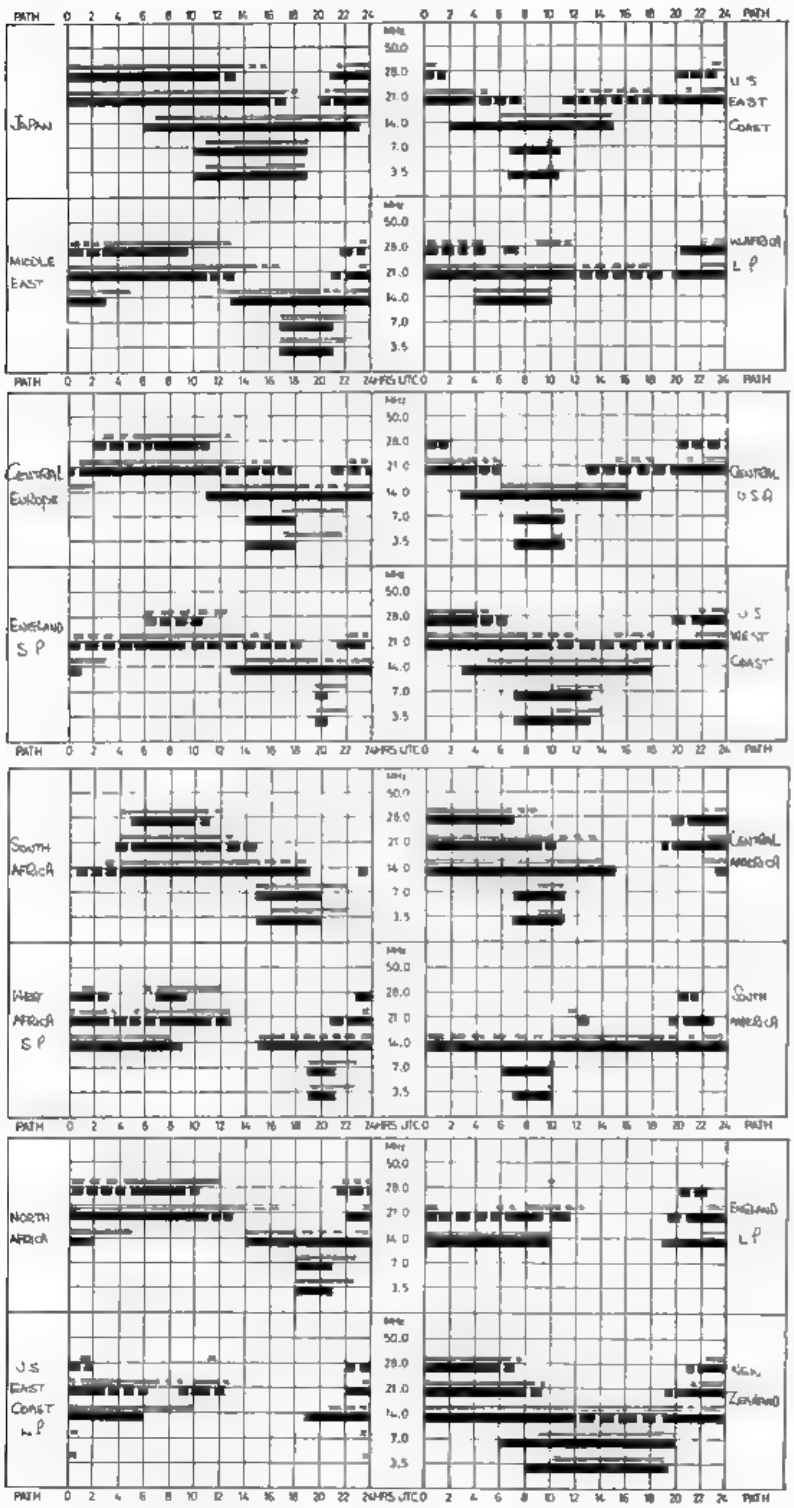
The Sovereign Hill station will transmit on public holidays and selected week-ends, on a frequency of 28.530 MHz, plus or minus QRM. Any contact with this station will count as two 'S' contacts towards the award All subsequent contacts with the "base" station will also count as two contacts, providing they are not made on the same day All other contacts, both "S" and "A" will count as one. There will also be a transmission on the same frequency each Sunday at 0000 GMT — Saturday USA In conjunction with the Welcome Stranger Ten-Ten Net, this will count as one contact. Other contacts may be made anywhere in the 10 metre band

This is a beautiful, high quality award, suitable for framing

Awards applications and further information write to Leo McPherson VK3NQ, PO Box 247 Ballarat East 3350, Victoria, Australia. ■

IONOSPHERIC PREDICTIONS

Len Poynter VK3ZGP/NAC



INTERNATIONAL NEWS

Extracts from a paper prepared by IARU Headquarters for the Region 2 Conference in Panama last September might be found interesting.

"Most amateur radio activity takes place in the bands between 1.8 and 148 MHz, with a growing amount also in the 420-450 MHz band now that the OSCAR satellites operate there. The heaviest concentration of stations is in the 3.5, 7, 14, 21, 28 and 144 MHz bands. Therefore, most amateurs tend to regard our allocations needs in and between these bands as being of prime importance. They reason that it is these allocations which will bear the greatest burden of occupancy as the Amateur Service, world-wide, continues to grow past its present number of stations, approximately one million.

However, the amateur activity which takes place on other frequencies is also of great importance to all amateurs, and those allocations must be defended and, in some cases, expanded. Here is why this is important to all amateurs, not just to the experimenters and others who operate there today.

As the technical state of the art improves, the upper limit of frequencies which can be used for every day amateur communication moves ever higher. The 420-450 MHz band is a good example. Just one or two decades ago, the communications range on this band was limited by the rather poor equipment and antennas which were then available. With the advent of low-noise, solid-state receiving devices and more efficient antennas, amateurs found that they could operate here just about as well and in some cases even better, than they could at 144 MHz. Today in Europe, amateur stations with reliable working ranges of more than 400 km at 432 MHz are commonplace, and the band is supporting much activity which otherwise would have to take place in the overcrowded 144 MHz band.

Amateur satellites hold the promise of intercontinental communication at VHF, UHF, and even higher frequencies, thus easing the burden on the overcrowded HF bands. A particular need is for allocations to the Amateur-Satellite Service between 438 MHz and 24 GHz, where no allocations now exist. Without access to one or more of the amateur bands at 1215, 2300, 3300, 5650, or 10,000 MHz, the potential of amateur satellites will be limited to whatever can be attained in the 435-438 MHz band and in small segments of the 28 and 144 MHz bands.

Amateur experimentation lends prestige to the service, and demonstrates that amateurs are not just hobbyists who engage in idle chatter. Many of the decisions affecting the Amateur Service, both internationally and domestically, are made by administrators who have a strong technical background. They are likely to be more sympathetic to the Amateur Service if they can be shown that radio amateurs share their professional interests, only as an avocation. Perhaps they will even want to become amateurs themselves! In the past, technological breakthroughs which were discovered or popularized by radio amateurs have won us many friends in the scientific, political and military communities. ■

DIVISIONAL NOTES

VK2

STOLEN EQUIPMENT REGISTER

The NSW Divisional Office is currently compiling a list of radio equipment stolen or lost. Other State Divisions, amateurs and radio users are invited to write to The Secretary, WIA NSW Division, PO Box 123, St. Leonards, NSW 2065, with the following details on stolen or lost gear:

1. Brand name/manufacturer.
2. Type number of equipment.
3. Serial number of equipment.
4. Type of equipment.
5. Date and time stolen or lost.
6. Police station reported to.
7. Owner's name and call sign.
8. Owner's address.
9. Distinguishing features on the equipment.

With a comprehensive listing, purchasers of "second hand" gear of doubtful origin can ring the NSW office during normal hours (10 a.m.-2 p.m. Tuesday and Thursday) to check with our files before completing the transaction.

Through this service we hope to be able to track the interstate or intrastate movements of stolen radio equipment, and hopefully find the people responsible for its theft and distribution.

As details are received, these will be passed on in small groups to AR for inclusion in the Hamad Stolen Equipment Section. ■

HAMADS

- Eight lines free to all WIA members. $8 per 3 cm for non-members.
- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
- Repeats may be charged at full rates.
- Closing date: 1st day of the month preceding publication. Cancellations received after about 12th of the month cannot be processed.
- QTHR means the advertiser's name and address are correct in the current WIA Radio Amateurs Call Book.

FOR SALE

FT227RA 2m synthesised 10W mobile with four memories, up/down scanning, digital readout, four month old, as new, $350; IC215 2m 3W unit fitted with repeaters 2-8 and reverse 2, simplex 40, 49, 50, 51, 52, 53 Victor, includes nicad battery pack w/charger, flex. helical whip, car mounting cradle, good cond., new price about $390, sell for $250, ONO. VK3YJO, QTHR.

ICOM IC202 2m SSB/CW Transceiver, Oscar crystal and pre-amp, $140; ICOM IC502 6m SSB/CW Transceiver, as new, $175; TRIO CO-1303A Oscilloscope, $170; all with manuals and cartons. Ron VK3BRM, ex VK3ZER, QTHR. Ph. (03) 465 6769.

Philips-TMC UHF Radiotelephone, type SC9 5/470, new, complete with detailed handbook, suitable for use as a transceiver or repeater station, same unit is currently being used for Wollongong VHF repeater, further information available, at cost including rocks, $85. Brian VK4ST. Ph. (071) 91 1172.

Kyokuto 2m FM Transceiver, 600 channels, fully synthesised, ¼ wave aerial, manual, microphone and mobile mounting bracket, $300. VK5NJ, QTHR. Ph. (08) 276 6908.

DC200 12V supply for FT200 Transceiver, $120 or offer to Box 35, Daw Park 5041, S. Aust. Ph. (08) 276 4547.

Kenwood TS-820 with digital readout, DC-DC converter, new tubes, AIWA mic., instr. manual, $995. David VK2NOB, QTHR. Ph. (02) 476 1048.

$1,000 will put you on 2m and 6m with "as new" gear; Kenwood TS 700A and 600A units, excellent order, $1,000 the pair of $550 each. VK3GM, QTHR. Ph. (053) 49 2028 A.H.

Stereo Amplifier, solid state, Realistic SA-10, as new with manual; cost $36, sell $15. Ph. (03) 059 84 1588.

ICOM IC22A, with 22 sets xtals, repeaters 1 to 8, anti-repeaters 1 to 8, simplex 40, 49, 50, 51 and aux. ATV liaison channel, deviation meter, ext. speaker, 2N6084 class C amp. in diecast box, 3 homebrew beams, 16 el. collinear, 5 el. parasetic and 4 el. quad, $300 the lot or near offer. VK3ATK, QTHR. Ph. (03) 370 2184.

Super Panther, 18 ch. multi-mode, with ant. and HB, also orig. 22 ch. SW and PT mic., sale to **licensed amateurs only,** $120, ONO; also 18 ch. SW suit electrophone, $6. VK3ZCO. Ph. (03) 45 2506.

Barlow-Wadley XCR-30 Rx, v.g.c., $200; xtal locked ULF conv. 10-500 kHz, 7 MHz IF, $20; telecommunications stacked J pole, 6 dB omni, 9 dB dire, suit 435 MHz, 50 ohms, $45; Redline stepdown trans., 230-110V, 1500VA, $35; home brew linear amp. 2 x 6JG6A (plus spare), 15-10m, 12V DC, 100W, $100; plus ASS mags and books. Ph. (03) 546 3940 A.H.

Ten-Tec 544 Transceiver with external power supply, as new and genuine reason for selling, $1,050. Ralph VK5NRD, Regency Park College, Regency Park 5010, SA, or Ph. (08) 46 6260.

Heathkit HW101 SSB tcvr with power supply, Heathkit (HP23B) mic. and speaker, $380; SWR power meter, $20; RF clipper, $45; audio generator, $30; Drake SSR1 Rx as new, $275; frequency meter, 125-20000kC (mains power supply), $40; valves from $2 to $11.50 ea.; Heathkit tube checker, model TC2, $35; Heathkit UTVM, mains power supply, $25; Heathkit grid dip meter, $35; Mecca 23 ch. CB tcvr BCB-6, $20; various xtals, $3 to $10 ea. VK3ABD, QTHR. Ph. (03) 89 9948.

Tri-Band Beam Hygain TH3JR, as new, $170, ONO. VK3NMJ. Ph. (03) 550 4203.

Hygain 14AVQ, 40-10m, trapped vertical, good cond., $45. VK3UV, QTHR. Ph. (03) 90 6424, A.H.

Yaesu FR50 Rx, 80-10m, AM-CW-SSB with WWV and 100kC calibrator, and FL50 Tx 80-10m SSB/CW 60W O/P with mil., handbooks and also FV50 ext. VFO for Tx, all complete and good cond., would suit Novice use, $300; also IC502 6m SSB Tcvr, S&C with 4 el. quad, $160. L. White, 30 Oaklands Pde., East Brisbane 4169. Ph. (07) 391 6160.

Swan 350, 117XC power supply, good cond., working order, manual, new set of valves in Tx, recently overhauled, $350. VK2NYD. Ph. (047) 51 1864.

FRG7 Comm. Rx, 4 months old, mint cond., $250; will deliver Victoria. Ph. (051) 58 1231 evenings.

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Teletype Model RO38, receive only hard copy printer/terminal, as new cond., currently used as line printer to LSI-11, $950. Please contact Ted Rigby. Ph. (042) 28 6811, 9 a.m.-5 p.m.

Two W2AU Quad Hubs, new, $20. VK3NMJ. Ph. (03) 550 4203.

Yaesu FT620B 6m Transceiver with VC-75 VOX/voice controller, as new with handbook, $515. VK2DBJ. Ph. (02) 634 2451.

Yaesu FT200 HF Transceiver, late model, with Yaesu matching AC supply and speaker, instruction book, and heavy duty mobile DC supply, excellent cond., $385. VK3BGI. Ph. (052) 75 3154 A.H.

Electronic Keyer, Dick Smith Type, with inbuilt paddle, $40; also Hidaka vertical antenna with 80m extension, $80; both as new. VK3BCT, M. Smith, 5 Glenfern Ave., Doncaster. Ph. (03) 850 2238 after 5 p.m., or Bus. (03) 546 8866.

Superhet. Rx, Siemens 170-5000 MHz in 7 bands, c/w manual, useful for determining antenna radiation patterns, etc., $200; Siemens capacitor unbalance test set, superb lab. instrument, must be seen, c/w manual, leads, etc., $70; Varian Rubidan freq. standard 5, 1, 0.5 MHz, $100; pulse echo test set, very comprehensive unit with 6 in. dual beam CRT, pulse amp. 9 steps 2ch. 100 kC and 30 MHz, time base 0.5 to 150 u seconds, $175; battery charger, constant potential rectifiers, a few types 50V at 3, 6 and 10A, price on application; Stabilac voltage stabiliser O/P 240V at 11A, $80; counters, PMG 50V type, in banks of 30, $5. VK3ZN. Ph. (03) 557 6031, (03) 41 2934 Bus.

Yaesu FT250 2m Transverter, $275; YO101 monitorscope, $300 (both 4 months old, never used); FV101B ext. VFO for 101E, $100; YC601 digital readout for 101E, $200. Ph. (02) 888 2475.

Trap Dipole, RAK Mkly-Vn, 80 through 10m, assembled and tuned to resonance on all bands, excellent cond., $70. VK3NOA, Box 79, Heidelberg 3084. Ph. (03) 45 1731.

Regulated Lab. PSU, improved EA design, plus and minus 0-20V 1.5A/150 mA or tracking V and I meters, professionaly built, $60; multimeter TMK 100R, $30; two 6KD6 PA valves, new, $8.50 ea.; two 20 ft. x 2 in. dia. alloy masts with nylon guys, pickets, hardware, $15 ea.; buyer collect. Denzil VK2BXF. Ph. (02) 888 2981 A.H.

Yaesu FT221R, exc. cond., rarely used, 2m FM, SSB, AM, 144-148 MHz, 600 kHz offset VOX, noise blanker, 25W PEP out., 240 AC/12V DC operation, xtal facilities, $600, ONO. VK3GX, QTHR. Ph. (03) 211 5289.

Comm. Rx DX-160, as new, $150; 6 only Pye mobile Tcvrs., FM, $40 the lot, xtals to convert to 27.88, 27.910, etc., $2 ea.; can also be conv. to 2 or 6 FM; 6 and K CB Servicemaster test eqpt. inst. manual, etc., brand new, cost $300, sell $150; Oaker SWR-200, 1 kW, brand new, $65; Philips PM5509 CTV signal gen., has VCR patterns, as new, current cost $1,400, sell from $600; 2 only .001 10 kV Tx caps, $4 ea.; Trio TR-2E 2m Tcrv, cct. diags., $95; 6-9m Command Rx, $10; 52.525 FM carphone, goes OK, $26; STC hybrid carphone, 2m FM 25W, ch. 3, 40, and purdi, etc., $65; mic. and cradle and cct. diag., Pye carphone 6m tuneable Rx, $15; 3-6m Command Rx, $10; 40 ass. xtals, HC 6V to miniature types, 4-48m, $1 ea.; send for list of actual freqs.; Command Rx rack, takes 3 rec., $5; 2 and 6 m converters and power supply on same chassis, $10. Will freight. Write VK2ZBD, Box 16, Hawks Nest 2324. Ph. (049) 97 0363.

Repeater 2 xtals, suit AWA, Vinten, IGL, ICOM IC22A, Yaesu FT2, Ken Multi-7, etc.; have one set for each of above rigs, only $11 a set posted. VK3ZNC/NIC, QTHR. Ph. (051) 47 2368 A.H.

Comm. Rx Drake SPR4 Noise Blanker, 150 kHz-30 MHz, 160m 80-10m, SSB, CW, AM, $666, ONO. L30142, QTHR.

Atlas 210X HF Tcvr., SSB and CW, 80-10m, complete h'book, power cables, plugs and mic., $500. VK2APP, QTHR. Ph. (063) 83 6206.

Kenwood TR7400A VHF Tcvr., 800 FM chs., 144-148 MHz, 25/30W, complete with mic., mobile mount, power cable, h'book, built-in scanner, $400. VK2APP, QTHR. Ph. (063) 83 6206.

Kenwood TS520, AC-DC model, perfect cond., any trial, $615, ONO; Willis pi-coupler coil. $10. VK3PR, QTHR. Ph. (056) 62 2711.

Yaesu FTDX 400 Tcvr with adjustable effective noise blanker, spkr, cooling fan, second VFO, set of 19 spare valves and manual, $470; TR44 rotor and control unit, with manual, $80; MFJ (US) audio speech processor and manual, $25; all equipment clean, unmarked and in original working order. VK2AOU, QTHR. Ph. (02) 53 9789 A.H., (02) 807 0484 Bus.

Hallicrafters SX-28 Rx c/w spare valves and handbook, modified for SSB, well maintained and neat appearance, $110. VK4ES, QTHR. Ph. (07) 371 3451.

Swan 240, complete with power supply, 80m, 40m, 20m, in good working order, $180. VK3AVA, 8 Brennan Street, McKinnon 3204. Ph. (03) 578 2058.

Yaesu FTDX400 Transceiver, exc. cond., has SP-400 speaker, PTT mic. and superb "Magnum 6" RF speech processor designed for FTDX400, imported from USA, $525. H. Young VK7AR, Box 90, Devonport 7310.

TH6-DX Hy-Gain Beam, 6 el., 20-15-10m, 8 years old but good cond., new reflector to boom bracket, $150. Carl Bicknell VK3BCF. Ph. (03) 699 5433 Bus., (03) 347 4295 A.H.

Hy-Gain Long John converted 10m, 5 el. mono yagi, $100; 5 el. 15m mono yagi, $120; Hy-Gain, Hy-Quad 2 el. Tri-Band quad, $180; AIGA ART 3000C heavy duty rotator, $110; 50 ft. Hills tower, $100. VK7NCW, QTHR. Ph. (002) 28 1891 A.H., (002) 78 0777 Bus.

HF Tri-Band Yagi Mosley TA33JR, old but working, buyer collect, allow one hour to remove, $100. VK3WW, QTHR.

FT101B Transceiver, complete with mic. and handbook, $565; IC202E c/w mounting cradle, 3 months old, $210; 25W linear to suit, $60. VK3RD, QTHR. Ph. (03) 579 6272.

"Learning Morse Code", new commercially printed book, excellent value, $6.50 posted, with two C60 Morse cassettes. K. Wilson, WIA VK2 Education Service, PO Box 109, Toongabbie 2146.

The Famous Novice Kit, contains Morse and theory, texts, tapes and 1000 typical exam questions, only $15 posted. K. Wilson, WIA VK2 Education Service, PO Box 109, Toongabbie 2146.

Learning Morse? Need a set speed tape? You nominate any speed between 4-20 w.p.m. We will send you a C60 tape for $2. Fred Santos, VK2 Education Service, 6 Cooper Street, Blacktown 2148.

Yaesu FT-101E Trx, 160-10m transceive, plus 10 MHz WWV and 27 MHz CB receive, very effective noise blanker, current model with front panel control for RF speech processor level, 100-120/200-240V AC, 13.8V DC, has had little use, excellent cond., overseas travel necessitates sale, $725, ONO. Alan Beagley VK4AFE. Ph. (07) 371 4389.

Drake T4X Tx SSB/CW AM 200W DC input with Drake AC4 power supply and mic., Drake R4A Rx with Drake noise blanker and accessory filters, Drake MS-4 spkr., Drake MN-4 ant. matching network, SWR bridge, Watt meter, mint cond., any test or inspection welcome, full price complete Drake station, $985. VK2JO, QTHR. Ph. (02) 389 0428 or (02) 389 7786 Bus., (02) 38 7756 A.H.

FT200 Transceiver converted for Novice, complete with manual, v.g.c., $350. Maurice Wright, 94 Lockwood Road, Kangaroo Flat 3555. Ph. (054) 47 7405.

FT-101E HF Transceiver, latest version, unused, complete with AC-DC supply, mic., accessories and manual, $720. Martin Donaldson VK4ZMF, QTHR. Ph. (07) 397 5657.

Yaesu LPF, 1kW rating, $20; desk type PTT mic., $12; Ringo ARX-2 2m FM antenna, $30; Swan WM-1500 RF power meter, 5/50/500/1500 watts, $50; Barlow XCR-30 comm. receiver, excellent order, $200. Contact VK3OM, QTHR. Ph. (03) 560 9215.

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WANTED

Kenwood TS600 6m Transceiver; also linears, valves or transistors for 6m; also 6m beams, especially for portable use. L. White, 30 Oaklands Pde., East Brisbane 4169, Qld. Ph. (07) 391 6160.

4CX250B Linear Amplifier (or similar) for 426 MHz operation. Please contact Jim VK5ZSA. Ph. (088) 21 1196 or (088) 21 1746 A.H.

From your junk box, knobs for WWII transceivers, Type 3, Mark 2, and Type A, Mark 3 (see photos AR November 1978, p. 30); also required front panel for Type A and power supply plugs Type 3. VK5BA, One Tree Hill 5114, SA. Ph. (08) 380 7192.

Kenwood KP202 2m FM Tcvr., c/w nicad batteries and charging base; will pay fair price. VK3WT, QTHR. Ph. (03) 288 5175.

Operating Manual for Facsimile Rx Muirhead D-888 P/B. VK7NHV, Box 181, Moonah 7009.

MRSA Carphone Junior Workshop Manual to borrow for photocopying or will buy. Kevin Moore, VK3ASM, QTHR. Ph. (03) 754 4194.

Yaesu FT-201 Transceiver (not FT-200); Yaesu FT-2FB, 2m FM xcvr, number of channels not important. Particulars to VK3OM, QTHR. Ph. (03) [redacted].

6m Transverter, 28 MHz IF, must be g.w.o., reasonable price; ARRL and RSGB handbooks, etc., 1955-1965, any cond. VK7WD, 30 Beddome Street, Sandy Bay, Hobart, Tas. 7005. Ph. (002) 25 3873 A.H.

EXCHANGE

FT-7, with regulated AC supply, 30 contacts only, any inspection; wish exchange for suitable AC Yaesu or Kenwood base transceiver, VK2PT, QTHR. Ph. (049) 43 1308.

GIFT

Light Oregon Mast, forty feet, on ground, free to anyone who can transport away. VK3GA, QTHR. Ph. (03) 29 7256.

TRADE HAMADS

QSL cards, log books, contest sheets — send 20c stamp for samples and prices to Linda Luther VK4VV, P.O. Box 498, Nambour, Qld. 4560.

KLM imported mono band beams for 40, 20 & 15 (ex-stock). Comprehensive range high gain beams for HF, VHF & UHF, suit amateur, novice & CB operators. 5, 8 & 11 el. models for 6 metre band. 7, 11 & 15 el models suit UHF-CB. Range of baluns and power dividers. Write for free catalogue. ATN Antennas, Box 80, Birchip, 3483. Ph. (054) 92 3211, ask for 264.

HF Dummy Loads. We have a quantity of Electrosil Deposited film resistors available, 250W rating at 150 ohms. Put 2 in parallel for 75 ohm 500W dummy load, or 3 in parallel for 50 ohm 750W dummy load. All are A1 guaranteed. Original cost was over $50 ea., yours for only $8.50 ea. plus $1 P and P on all orders. Royce Electronics, Box M220 SME, Redfern, NSW 2012.

QSP

IHF OPPOSED TO INTERFERENCE LEGISLATION

Representatives of the USA Institute of High Fidelity testified recently at federal hearings into the impact of radio frequency interference on consumer electronic products. IHF's Technical Director, Leonard Feldman, told the Senate's Communications Subcommittee that the Goldwater sponsored S.864 would force unnecessarily high prices on consumers. "Every purchaser of an audio component should not have to bear the cost of including multiple RFI filters and shielding in high fidelity components when a large percentage of purchasers will never experience any interference problem." Enforcing such government-sponsored legislation, Feldman continued, would unnecessarily increase the cost of manufacturing hi-fi equipment.

— From Vicom Ham News, January 1979.

GEMFIELDS RADIO GROUP, RUBYVALE 4702

This recently formed affiliated group situated in the Central Queensland sapphire fields, intends to run a contest during August 1979, to coincide with the Centenary of the fields — Details of dates, times, will be released, closer to the contest time. ■

SILENT KEYS

It is with deep regret that we record the passing of —

Mr. E. H. MOORE	**L31108**
Mr. S. G. BAXTER	**VK3ZAB**
Mr. W. J. CROMIE	**VK2MZ**

OBITUARY

WAL CROMIE **VK2MZ**

It was with deep regret that the passing of Wal was recorded on 5th February, 1979.

In recent years he suffered a number of serious illnesses. Between bouts, with the aid of his wife, he journeyed to many parts of Australia, complete with caravan and appropriate radio equipment for the trip.

His amateur activity commenced pre-war, joining the RAAF in 1940.

Serving in the radio field for the duration, he was discharged in 1946 to rejoin in the same year and finally leaving the services in 1962.

Wal was essentially an experimenter; his extensive operation on the VHF bands in the 1950 and 1960 era ensured that VK2MZ was one of the best known calls in that part of the spectrum.

Always a happy, modest person, his tremendous enthusiasm and ability inspired many others to join the amateur ranks. Wal would help them in any way.

A member of the Blaxland Bush Fire Brigade, he clearly demonstrated the value of VHF communication, building base and tender equipment to show its advantages over HF working. Later all communication was taken over by the City Council.

Wal received little credit, as did others, for their original work in the field.

In the disastrous bushfires in the Blue Mountains in 1968 Wal was again active.

All amateurs extend to his wife Peg, son Robert, and daughter-in-law Lyn, their deepest sympathy.

— From W. M. Moore VK2HZ.

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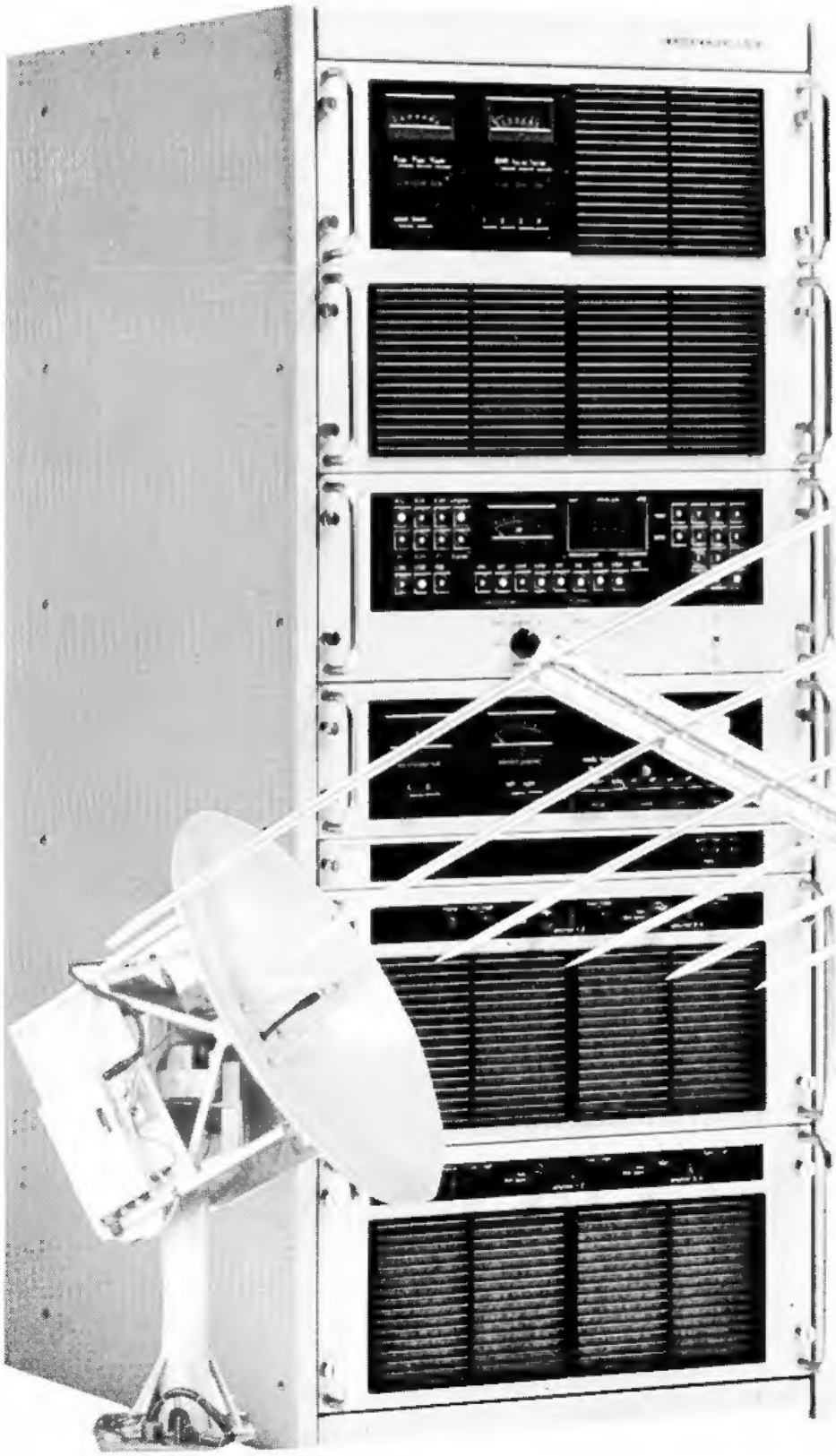

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